23-14

WATER CONSERVATION PLAN

1985

SUPPLEMENT

IMPERIAL IRRIGATION DISTRICT

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This Supplement contains several documents considered
to have significant importance relative to the
Water Conservation Plan.

IMPERIAL IRRIGATION DISTRICT

IMPERIAL IRRIGATION DISTRICT
WATER CONSERVATION PLAN
SUPPLEMENT

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2. State Water Resources Control Board Water Rights Decision 1600, "Imperial Irrigation District Alleged Waste and Unreasonable Use of Water" June 1984 (excerpts, "Conclusion" and "Order").

3. Letter from Ralph Gilbert (Imperial Valley farmer) to Mr. (R. F.) Carter and Mr. (J. M.) Sheldon, dated September 19, 1974.

4. Letter to Board of Directors from Citizens' Salton Sea Committee, dated June 1, 1976.

5. Memorandum of Understanding between the Agricultural Research Service and Imperial Irrigation District for project entitled "Use of Saline Drainage Water for Irrigation: a field demonstration in Imperial Valley," dated February 16, 1982.

6. Technical paper entitled "Irrigation Efficiency in Imperial," J. D. Oster, J. L. Meyer, L. Hermsmeier, and M. Kaddah, extracted from Proceedings of the Specialty Conference sponsored by the Irrigation and Drainage Division of the American Society of Civil Engineers, entitled "Water Today and Tomorrow," held at Flagstaff, Arizona, July 24-26, 1984.

7. University of California Cooperative Extension, Division of Agriculture and Natural Resources Leaflet 21379 "California's Water Resources," April 1984.

8. Memorandum of Understanding between Imperial Irrigation District and U.S. Water Conservation Laboratory, Phoenix, Arizona, for Cooperative Delivery Response Study, dated January 3, 1985.

9. Agreement between the Bureau of Reclamation and Imperial Irrigation District to Provide for an Advance of Funds to Supplement Available Appropriated Federal Funds for the Canal lining and System Improvement Study, dated June 3, 1985.

10. Advisory Panel on Agricultural Water Conservation, Report of Findings, dated May 1979, and submitted to the Director, Department of Water Resources.

11. Advisory Committee on Agricultural Water Problems/Water Conservation in Agriculture, Short and Long-Term Strategy, September 1980, submitted to sponsoring agencies.

12. Governor George Deukmejian presentation to the California Legislature and others, entitled "California's Water Future, Policy and Plumbing Go Hand in Hand, A Call to Action," April 5, 1984.

13. List of canals and laterals recommended by Division Superintendents to be concrete lined due to high seepage.

14. Canal and Lateral Mileage and Location of Operational Discharges (spills).

15. Water Conservation Information and Advice mailed to District consumers.

SUPPLEMENT NO. 1

R E S O L U T I O N Resolution No. 37-74

WHEREAS, the Board of Directors of Imperial Irrigation District, at its meeting of December 11, 1973, approved the Water and Power Budgets for the calendar year 1973; and

WHEREAS, the water section of the budget included the sum of $650,000 for the concrete lining program and the success of this program indicates that an additional sum of $100,000 will be required to continue this program; and

WHEREAS, the "Building Construction & Property Fund," according to the "Special Fund Report," has a balance of $569,307 as of March 31, 1974, and it is considered in the best interest of the District to transfer the sum of $100,000 from said fund to the "Irrigation Construction Fund (General Fund)" for concrete lining purposes.

NOW, THEREFORE, on motion of Director Moore, seconded by Director Galleano, BE IT HEREBY RESOLVED that the sum of $100,000 be transferred from the "Building Construction & Property Fund" to the "General Fund" of the District.

PASSED AND ADOPTED this 7th day of May, 1974.

IMPERIAL IRRIGATION DISTRICT

By Carl Beem
President

By Larry E. Beck
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 35-75

WHEREAS, the Board of Directors has heretofore established water rates for deliveries of water delivered pursuant to the "Rules and Regulations Governing the Distribution and Use of Water and Construction, Operation and Maintenance of the Canal and Drainage System" of the District; and

WHEREAS, from time to time the District has by resolution changed said rates to reflect the amount of income required to operate the District's Water Department pursuant to said rules and regulations; and

WHEREAS, the constitution of the State of California states among other things that because of the conditions prevailing in this State, the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare; and

WHEREAS, said rules and regulations referred to hereinabove provide a program to concrete line the District's lateral canal system for the purpose of conserving water to the fullest extent; and

WHEREAS, the present schedules of rates and charges for the use of water furnished by Imperial Irrigation District to accommodate the operation and maintenance work, capital improvements, as well as concrete lining, are insufficient to provide an orderly program of construction to the best financial advantage to the District.

NOW, THEREFORE, BE IT RESOLVED that the following schedules of rates and charges for the use of water furnished by Imperial Irrigation District be and the same are hereby approved and adopted to become effective from and after July 1, 1975, until the further order of this Board.

Schedule No. 1

General Agricultural and Municipal Service

Applicable to:

(a) Service where water is taken from the canals of the District for general irrigation use by lands or properties located within the boundaries of the District.

(b) Service where water is taken from the canals of the District for use by cities, incorporated or unincorporated, towns, private water companies, mutual water companies, and water utility districts for lands or properties within the boundaries of the District.

Water Rate

For all water delivered Schedule A	$3.50 per acre-foot
For all water delivered Schedule B	$3.00 per acre-foot

Minimum Charge

The minimum charge for a delivery of water of "stock run," shall be $1.75 per day.

Schedule No. 1-A

Mesa Agricultural Service

Applicable to service for irrigation on mesa lands within the boundaries of the District. By "mesa lands" is meant all lands located above the 1030 contour line.

Water Rate

For the first 5 acre-feet per acre irrigated per year	$3.50 per acre-foot
For all over 5 acre-feet per acre irrigated per year up to and including 7 acre-feet per year	$7.00 per acre-foot
For all over 7 acre-feet per acre irrigated per year	$14.00 per acre-foot

Minimum Charge

The minimum charge for a delivery of water of "stock run," shall be $1.75 per day.

Special Conditions

(a) All lands receiving water service under this schedule shall comply in all respects with Regulation No. 19 of the "Rules and Regulations Governing Distribution and Use of Water" approved June 6, 1967.

Schedule No. 1-A (cont.)

(b) Where water service is furnished to mesa lands which are outside the boundaries of the District, the water rates shall be double those shown in this schedule. The minimum charge shall be $7.00 per day.

Schedule No. 2

Pump Service

Applicable to service to private pumping plants where water is taken from the canal of the District to be used for general irrigation for lands or properties within the boundaries of the District.

Annual Water Rate

Per acre irrigated	$10.50 per year

Schedule No. 3

Pipe Service

Applicable to service from any pipes which are installed to take water by gravity flow only from the canals of the District for general use.

Annual Charge

(a)	For pipes with a diameter of 2 inches or less	$24.00 per year
(b)	For pipes with a diameter of over 2 inches and not exceeding 6 inches, per acre served	$16.00 per year

Annual Minimum Charge

For pipes with a diameter of over 2 inches and not exceeding 6 inches, the minimum charge for each and every service connected shall be	$32.00 per year

Special Conditions

(a) Service to Governmental Agencies Located Outside the Boundaries of the District. When a Governmental Agency has an installation located outside the boundaries of the District that receives water service by a service pipe, the annual and minimum charge shall be double those shown above.

Schedule No. 3 (cont.)

(b) In the event any of the above pipes serve more than one water user, each additional water user shall be subject to the annual charges provided for in this schedule.

Schedule No. 4

Wholesale Service

Applicable to water service to water users' associations, only, for commercial and industrial purposes.

Water Rate

For all water delivered	$3.50 per acre-foot

Special Conditions

(a) Annual Rate Based on Gross Acreage. In those cases, where due to conditions existing in the customer's facilities for handling water, it is impractical for the District to install water measuring equipment, water service applicable to this schedule shall be furnished on an annual charge per acre as follows:

Water Charge

For gross acreage of area served, per acre	$28.50 per year

Annual Minimum Charge

Annual minimum charge to any water users' association shall be	$57.00 per year

Schedule No. 5

Miscellaneous Service

Applicable to water service to schools, churches, cemeteries, experimental farms, golf courses, and recreational activities directly connected with such agencies.

Rate

(a) For school grounds, church yards, cemeteries, hospitals, agricultural experimental farms operated by public agencies, and other similar uses by public agencies, none of which are in excess of 40 gross acres, water shall be delivered without charge except as provided by Schedule 6 or 7.

(b) For service to cemeteries and agricultural experimental farms in excess of 40 gross acres, all water delivered will be charged for at the rates stipulated under Schedule No. 1, "General Agricultural Service."

(c) Water service to golf clubs and for similar organized recreational activities shall be furnished at a rate of $7.00 per year for each acre irrigated.

Special Conditions

(a) Restriction of Use. Water delivered under this schedule shall be used exclusively for purposes directly connected with the functions of the user. Where water so delivered is used for any other purposes, the regular charges under the applicable schedule shall apply.

(b) Water Service - Small Acreages. Except as provided for herein, any water user receiving water directly or indirectly, from the District, and said water user not otherwise subject to a water rate for such water schedule shall be charged as provided for in Schedule No. 3, "Pipe Service."

BE IT FURTHER RESOLVED, by this resolution, that an Irrigation Capital Improvement Fund account be established from this date forward and maintained for a period of three years if not otherwise cancelled beforehand. Into said account shall be deposited the sum of 50¢ per acre-foot for each acre-foot of water sold as recorded by book of accounts reflecting the sales captioned "Delivered to Users"; and

BE IT FURTHER RESOLVED that said Irrigation Capital Improvement Fund shall be used for the concrete lining program and for no other purpose.

PASSED AND ADOPTED this 10th day of June, 1975.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By Larry E. Beck
Secretary

RESOLUTION NO. 53-75

WHEREAS, the Board of Directors of Imperial Irrigation District at its meeting of December 24, 1974, approved the water and power budgets for the calendar year 1975; and

WHEREAS, the Water Section of the budget included the sum of $650,000 for the regular concrete lining program and the success of said program indicated that an additional sum of $100,000 would be required to continue said program; and

WHEREAS, the Board of Directors by acting upon Resolution 15-75 did in fact authorize the transfer of $100,000 from the "Equipment Fund" to the "General Fund" of the District to be used for concrete lining purposes; and

WHEREAS, the Board of Directors of Imperial Irrigation District recognizing the need to accelerate its program of concrete lining, passed and adopted Resolution 35-75, revising the District's water rate from $3.00 to $3.50 per acre-foot for all water used, except where water service is taken from the canals of the District, for use by cities, incorporated or unincorporated, towns, private water companies, mutual water companies, and water utility districts, for lands or properties within the boundaries of the District; and

WHEREAS, said Resolution 35-75 became effective on July 1, 1975, placing into motion the new charge to be used for concrete lining purposes; and

WHEREAS, the concrete lining program, as accelerated, will not be funded until the months of September and October, respectively; and

WHEREAS, the sum of $100,000 is required now on a temporary basis to fund said accelerated program.

NOW, THEREFORE, on motion of Director Moore, seconded by Director Anderholt, BE IT HEREBY RESOLVED that the sum of $100,000 be transferred from the "Equipment Fund" to the "Irrigation Capital Improvement Fund" of the District to be used for concrete lining purposes; said sum plus interest to be returned by the "Irrigation Capital Improvement Fund" to the "Equipment Fund" on or before November 1, 1975.

PASSED AND ADOPTED this 22nd day of July, 1975.

IMPERIAL IRRIGATION DISTRICT

By _____ President

By _____

RESOLUTION NO. 89-75

WHEREAS, IMPERIAL IRRIGATION DISTRICT desires to acquire a right-of-way over public lands for the purpose of a reservoir to be located in Section 33, Township 14, South Range 13 East, all in the County of Imperial, State of California, and more particularly described as follows:

> That portion of the Northwest quarter of the Southeast quarter of Section 33, Township 14 South, Range 13 East, S.B.B.&M., in the County of Imperial, State of California, according to United States Government Plat of Re-Survey approved March 15, 1909 and on file in the United States Land Office, described as follows:
>
> Beginning at the Southeast corner of said Northwest quarter of the Southeast quarter of Section 33; thence North 00° 02' 04" West along the East line thereof 820.43 feet to the true point of beginning; thence continuing North 00° 02' 04" West 500.00 feet to the Northeast corner of said Northwest quarter of the Southeast quarter of Section 33; thence South 89° 58' 08" West 276.04 feet along the North line thereof; thence South 08° 20' 16" West 505.38 feet; thence North 89° 58' 08" East 349.59 feet to the true point of beginning.

pursuant to the Act of March 3, 1891, C. 561, Sec. 18, 26 Stat. 1101; March 4, 1917, C. 184, Sec. 1, 39 Stat. 1197; May 28, 1926, C. 409, 44 Stat. 668, 43 USC 946 and in accordance with the terms and conditions of the applicable regulations pursuant thereto contained in Part 2800, Title 43 C.F.R.

NOW, THEREFORE BE IT AND IT IS HEREBY RESOLVED that LOM THOMPSON as President and LARRY BECK as Secretary be and they are hereby authorized and directed to execute and file on behalf of IMPERIAL IRRIGATION DISTRICT an Application to the Secretary of Interior of the United States for such right-of-way.

PASSED AND ADOPTED this 26th day of December, 1975.

IMPERIAL IRRIGATION DISTRICT

By _____
President Board of Directors

By Larry E. Beck
Secretary Board of Directors

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO, CALIFORNIA

RESOLUTION NO. 11-76

WHEREAS, the Imperial Irrigation District, in its continuing efforts to afford the best service for its water users compatible with beneficial use and conservation of Colorado River water, has engineered and constructed a water reservoir adjacent to the East Highline Canal and the Vail Supply Canal; and

WHEREAS, this reservoir has a capacity approximating three hundred acre feet of water which it can accept and discharge solely by gravity flow, thereby requiring no consumption of energy for pumping, and

WHEREAS, this construction in the best interests of water conservation is durable and lasting, and

WHEREAS, it would be in the best interests of the people of Imperial Valley to recognize this reservoir by name or title for reference.

NOW, THEREFORE, be it resolved by the Board of Directors of the Imperial Irrigation District that the subject reservoir be dedicated to the spirit of conservation and service.

BE IT FURTHER RESOLVED, that the facility be known hereafter as the Nectarine Reservoir.

PASSED AND ADOPTED this 10th day of February, 1976.

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO CALIFORNIA

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

RESOLUTION NO. 29-76

WHEREAS, in connection with the operations of the IMPERIAL IRRIGATION DISTRICT, the public interest and necessity require the acquisition, construction and completion of a public improvement; namely, a water storage and regulation reservoir for the purpose of conserving water and improving water control; and

WHEREAS, the public interest and necessity require the acquisition for and in connection with said public improvement, the real property in fee hereinafter described.

NOW THEREFORE, BE IT RESOLVED by the Board of Directors of Imperial Irrigation District that the public interest and necessity require the acquisition by the Imperial Irrigation District of the hereinafter described real property in fee for the public improvement; namely, public grounds for use as a water storage and regulation reservoir for the purpose of conserving water and improving water control by the Imperial Irrigation District; said proposed public improvement is planned and located in a manner which will be most compatible with the greatest public good and the least private injury.

The said real property hereinabove referred to is described as follows:

That portion of Tracts 214 and 308, T. 14 S., R. 13 E., S.B.B.&M. described as follows: BEGINNING at the intersection of the east line of Tract 214 and the center line of Edgar Road; thence Westerly along said center line of Edgar Road to the west line of Tract 214; thence S. 0°02'00" E., 50.35 feet to the center line of the Sumac Canal; thence Westerly along said center line to the east line of the NW 1/4 of the SE 1/4 of Section 33; thence North along said east line to the northeast corner of said NW 1/4 of the SE 1/4 of Section 33; thence Westerly along the north line thereof to the center line of the Westside Main Canal; thence N. 08°20'01" E. along said center line 662.52 feet; thence S. 89°48'13" E. to the east line of Tract 214; thence Southerly along said east line to the Point of Beginning.

BE IT FURTHER RESOLVED that the attorneys for Imperial Irrigation District be and they are hereby authorized, directed and instructed to commence condemnation proceedings on behalf of Imperial Irrigation District to acquire in the name of Imperial Irrigation District a fee simple estate in and to the said hereinabove described real property.

PASSED AND ADOPTED THIS 3rd day of May, 1976.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By Larry E. Beck
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911

RESOLUTION NO. 45-76

WHEREAS, the Board of Directors has heretofore established water rates for deliveries of water delivered pursuant to the "Rules and Regulations Governing the Distribution and Use of Water and Construction, Operation and Maintenance of the Canal and Drainage System" of the District; and

WHEREAS, from time to time the District has by resolution changed said rates to reflect the amount of income required to operate the District's Water Department pursuant to said rules and regulations; and

WHEREAS, the constitution of the State of California states among other things that because of the conditions prevailing in this State, the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare; and

WHEREAS, the Board of Directors has determined that it is necessary to reassert its goals and objectives concerning water conservation, and since there are several new and innovative procedures for increasing the beneficial use of this vital resource, it is necessary and desirable to take advantage of these procedures as they have developed; and

WHEREAS, the Board of Directors of the District, authorized several public hearings to receive input information regarding practical and productive water conservation methods and practices.

NOW, THEREFORE, BE IT RESOLVED that the following schedule of practices be hereby adopted:

(1) Construction of No. 8 Pond;

(2) Reconstruct, to the extent necessary, all waste boxes in system;

(3) Recruitment and employment of an adequate number of water regulating personnel to schedule changes in water deliveries to water users as requested as the system will permit;

(4) An inventory of surface field discharge water will be taken daily and an assessment may be levied against all discharges which equal 15% or more of the water being delivered and measurement thereof shall have been taken on two successive occasions not less than nine hours apart in a 24-hour period. The term assessment used herein shall mean the quantity of water ordered in second feet and reduced to acre-feet, times the scheduled water rate multiplied by 3 for the day in which the measurements were taken;

(5) Surface pond development through evaporation;

(6) Acquisition of land to construct reservoir on Central Main Canal in the vicinity of No. 4 Heading;

(7) Study relating to water recovery lines paralleling the East Highline and Westside Main Canals for seepage recovery which is now going into drainage system and to Salton Sea;

(8) Free use of drainage water and the free use of water in canals that has passed the last delivery on any system, which would otherwise discharge into the Salton Sea. User to be responsible for any necessary pumping to reservoir storage if required.

(9) Continuation of concrete lining program;

(10) The initiation of record to reflect accrued water use per acre per parcel through computerized billing process for period July 1 to June 30 of each year;

(11) Accelerated program to install radio equipment in all water conservation related mobile equipment for immediate exchange of information with supervision and Water Control Section;

(12) Immediate initiation of irrigation management services program;

(13) Delivery of water off-schedule when and wherever possible.

BE IT FURTHER RESOLVED that the following schedules of rates and charges for the use of water furnished by Imperial Irrigation District be and the same are hereby approved and adopted to become effective from and after July 1, 1976, until the further order of this Board.

Schedule No. 1

General Agricultural and Municipal Service

Applicable to:

(a) Service where water is taken from the canals of the District for general irrigation use by lands or properties located within the boundaries of the District.

(b) Service where water is taken from the canals of the District for use by cities, incorporated or unincorporated, towns, private water companies, mutual water companies, and water utility districts for lands or properties within the boundaries of the District.

Schedule No. 1 (Cont.)

Water Rate

For all water delivered Schedule A	$4.25 per acre-foot
For all water delivered Schedule B	$3.75 per acre-foot

Minimum Charge

The minimum charge for a delivery of water of "stock run" shall be $2.15 per day.

Schedule No. 1-A

Mesa Agricultural Service

Applicable to service for irrigation on mesa lands within the boundaries of the District. By "mesa lands" is meant all lands located above the 1030 contour line.

Water Rate

For the first 5 acre-feet per acre irrigated per year	$4.25 per acre-foot
For all over 5 acre-feet per acre irrigated per year up to and including 7 acre-feet per year	$8.50 per acre-foot
For all over 7 acre-feet per acre irrigated per year	$17.00 per acre-foot

Minimum Charge

The minimum charge for a delivery of water of "stock run" shall be $2.15 per day.

Special Conditions

(a) All lands receiving water service under this schedule shall comply in all respects with Regulation No. 19 of the "Rules and Regulations Governing Distribution and Use of Water" approved June 6, 1967.

(b) Where water service is furnished to mesa lands which are outside the boundaries of the District, the water rates shall be double those shown in this schedule. The minimum charge shall be $8.50 per day.

Schedule No. 2

Pump Service

Applicable to service to private pumping plants where water is taken from the canal of the District to be used for general irrigation for lands or properties within the boundaries of the District.

Schedule No. 2 (Cont.)

Annual Water Rate

Per acre irrigated	$12.75 per year

Schedule No. 3

Pipe Service

Applicable to service from any pipes which are installed to take water by gravity flow only from the canals of the District for general use.

Annual Charge

(a)	For pipes with a diameter of 2 inches or less	$24.00 per year
(b)	For pipes with a diameter of over 2 inches and not exceeding 6 inches, per acre served	$16.00 per year

Annual Minimum Charge

For pipes with a diameter of over 2 inches and not exceeding 6 inches, the minimum charge for each and every service connected shall be	$32.00 per year

Special Conditions

(a) Service to Governmental Agencies Located Outside the Boundaries of the District. When a governmental agency has an installation located outside the boundaries of the District that receives water service by a service pipe, the annual and minimum charge shall be double those shown above.

(b) In the event any of the above pipes serve more than one water user, each additional water user shall be subject to the annual charges provided for in this schedule.

Schedule No. 4

Wholesale Service

Applicable to water service to water users' associations, only, for commercial and industrial purposes.

Water Rate

For all water delivered	$4.25 per acre-foot

Schedule No. 4 (Cont.)

Special Conditions

(a) Annual Rate Based on Gross Acreage. In those cases, where due to conditions existing in the customer's facilities for handling water, it is impractical for the District to install water measuring equipment, water service applicable to this schedule shall be furnished on an annual charge per acre as follows:

Water Charge

For gross acreage of area served, per acre	$34.50 per year

Annual Minimum Charge

Annual minimum charge to any water users' association shall be	$69.00 per year

Schedule No. 5

Miscellaneous Service

Applicable to water service to schools, churches, cemeteries, experimental farms, golf courses, and recreational activities directly connected with such agencies.

Rate

(a) For school grounds, church yards, cemeteries, hospitals, agricultural experimental farms operated by public agencies, and other similar uses by public agencies, none of which are in excess of 40 gross acres, water shall be delivered without charge except as provided by Schedule 6 or 7.

(b) For service to cemeteries and agricultural experimental farms in excess of 40 gross acres, all water delivered will be charged for at the rates stipulated under Schedule No. 1, "General Agricultural Service."

(c) Water Service to golf clubs and for similar organized recreational activities shall be furnished at a rate of $8.50 per year for each acre irrigated.

Special Conditions

(a) Restriction of Use. Water delivered under this schedule shall be used exclusively for purposes directly connected with the functions of the user. Where water so delivered is used for any other purposes, the regular charges under the applicable schedule shall apply.

Schedule No. 5 (Cont.)

(b) Water Service - Small Acreages. Except as provided for herein, any water user receiving water directly or indirectly, from the District, and said water user not otherwise subject to a water rate for such water schedule shall be charged as provided for in Schedule No. 3, "Pipe Service."

BE IT FURTHER RESOLVED, by this resolution that the Irrigation Capital Improvement Fund account established by Resolution No. 35-75 on June 10, 1975, to be maintained for a period of three years, if not otherwise cancelled beforehand, is to remain in effect undisturbed for the duration of the concrete lining program.

PASSED AND ADOPTED this 29th day of June, 1976.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 49-76

WHEREAS, the Board of Directors has heretofore established water rates for deliveries of water delivered pursuant to the "Rules and Regulations Governing the Distribution and Use of Water and Construction, Operation and Maintenance of the Canal and Drainage System" of the District; and

WHEREAS, the Board of Directors adopted Resolution 45-76 which adjusted the water rate as indicated by said resolution; and

WHEREAS, said resolution goes on to state among other things that a certain schedule of practices will be adopted, referenced as items 1-13, inclusive, and as evidenced by the resolution therein; and

WHEREAS, it was the intention of the Board of Directors by increasing the rate by the sum of 75¢ per acre-foot, as established by said resolution, and to use said sum for accomplishing the projects reflected by said Resolution 45-76, items 1-13, and said revenue as collected was not intended to be used for any other purpose.

NOW, THEREFORE, BE IT HEREBY RESOLVED, on motion of Director Singh, seconded by Director Galleano, that a Water Conservation Fund account shall be established commencing July 1, 1976, and maintained for the purpose of funding the work to be performed known as items 1-13 as set forth in Resolution 45-76. Into said account shall be deposited the sum of 75¢ per acre-foot for each acre-foot of water sold as recorded by book of accounts reflecting the sales captioned "Delivered to Users"; and

BE IT FURTHER RESOLVED that said Water Conservation Fund (WCF) shall be used for the work stated in Resolution 45-76 and for no other purpose.

PASSED AND ADOPTED this 13th day of July, 1976.

IMPERIAL IRRIGATION DISTRICT

By _____
Vice-President

By _____
Secretary

RESOLUTION NO. 16-77

WHEREAS, the Board of Directors of Imperial Irrigation District initiated a practical and productive water conservation plan, including comprehensive methods and practices, on July 1, 1976; and

WHEREAS, the Board of Directors of Imperial Irrigation District desires to re-state its undivided attention towards administering its water conservation program heretofore resolved by re-affirming its collective position to do so; and

WHEREAS, the Board of Directors in light of Governor Brown's mailgram dated February 12, 1977, has determined that it is necessary to re-affirm its goals and objectives concerning water conservation and since there are several new and innovative procedures for increasing the beneficial use of "water"--one of our State's most precious resources--it is, therefore, our desire to take advantage of these procedures as they have developed which are delineated as follows:

(1) Construction of a 600 acre-foot water storage reservoir for water regulation;

(2) Reconstruct, to the extent necessary, all waste boxes in system (approximately 6000);

(3) Recruitment and employment of an adequate number of water regulating personnel to schedule changes in water deliveries to water users as requested as the system--approximately 450,000 acres of farmland--will permit;

(4) An inventory of surface field discharge water will be taken daily and an assessment may be levied against all discharges which equal 15% or more of the water being delivered and measurement thereof shall have been taken on two successive occasions not less than nine hours apart in a 24-hour period. The term assessment used herein shall mean the quantity of water ordered in second-feet and reduced to acre-feet, times the scheduled water rate multiplied by three for the day in which the measurements were taken;

(5) Surface pond development through evaporation;

(6) Acquisition of land to construct reservoir on Central Main Canal in the vicinity of No. 4 Heading for water regulation purposes--storage capacity 280 acre-feet.

(7) Study relating to water recovery lines paralleling the East Highline and Westside Main Canals for seepage recovery and re-use which is now going into drainage system and to Salton Sea;

(8) Free drainage water to any person willing to pump and use same;

(9) Continuation of concrete lining program to the extent of expending two million dollars annually to line lateral system;

(10) The initiation of a record to reflect accrued water use per acre per parcel through computerized billing process for period July 1 to June 30 of each year;

(11) Accelerated program to install radio equipment in all water conservation related mobile equipment for immediate exchange of information with supervision and Water Control Section;

(12) Immediate initiation of irrigation management services program;

(13) Delivery of water-off schedule (off peak) when and wherever possible.

NOW, THEREFORE, on motion of Director Galleano, seconded by Director Singh, BE IT HEREBY RESOLVED that the foregoing methods and practices are hereby re-affirmed as previously adopted for the purpose of achieving that the general welfare of the people of the State of California requires that the water resources of the State be put to beneficial use to the fullest extent to which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with the view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.

PASSED AND ADOPTED this 15th day of February, 1977.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 26-77

WHEREAS, Imperial Irrigation District has been the diverter and distributor of Colorado River water for agricultural, domestic, and industrial purposes in the Imperial Valley since 1911; and

WHEREAS, J. M. Sheldon had been continuously employed by Imperial Irrigation District since 1929 until he passed away on March 7, 1977; and

WHEREAS, Mr. Sheldon had served in virtually all capacities of the Water Department and operation, maintenance, and construction, including that of Department Manager and Consultant thereto; and

WHEREAS, his service contributed immeasurably to the success and efficiency of the District in its advancement from relative obscurity to international acclaim; and

WHEREAS, his unique contributions have been recognized and honored by landowners, governmental officials, and the general public alike; and

WHEREAS, his expertise in the field of water conservation has been duly recognized by the Board's action in accepting his recommendation to construct water storage reservoir number two at No. 8 Heading on the Westside Main Canal; and

WHEREAS, said reservoir is in its final stages of completion; and

WHEREAS, the Board of Directors desires to pay tribute to Mr. Sheldon's long, loyal, and dedicated service to Imperial Irrigation District by memoralizing his contribution to the District and the people the District represents by officially designating said facility as the "J. M. Sheldon Water Conservation Storage Reservoir."

NOW, THEREFORE, on motion of Director Galleano, seconded by Director Mitchell, BE IT HEREBY RESOLVED that the reservoir referred to hereinabove shall be known as the "J. M. Sheldon Water Conservation Storage Reservoir" and an appropriate plaque be installed at the reservoir site to this effect.

PASSED AND ADOPTED this 15th day of March, 1977.

IMPERIAL IRRIGATION DISTRICT

By Harold L. Thorne
President

By Lawrence E. Burns
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 39-77

WHEREAS, the Board of Directors has heretofore established by resolution rates for the delivery of water pursuant to the "Rules and Regulations Governing the Distribution and Use of Water and Construction, Operation and Maintenance of the Canal and Drainage System" of the District; and

WHEREAS, from time to time, the District has by resolution changed said rates to reflect the amount of income required to operate the District's water department pursuant to said rules and regulations.

NOW, THEREFORE, BE IT RESOLVED that the following schedules Nos. 1, 1-A, 2, and 5 of rates and charges for the use of water furnished by Imperial Irrigation District be and the same are hereby approved and adopted to become effective from and after June 1, 1977, and that the following schedules Nos. 3 and 4 be approved and adopted to become effective from and after July 1, 1977.

Schedule No. 1

General Agricultural and Municipal Service

Applicable to:

(a) Service where water is taken from the canals of the District for general irrigation use by lands or properties located within the boundaries of the District.

(b) Service where water is taken from the canals of the District for use by cities, incorporated or unincorporated, towns, private water companies, mutual water companies, and water utility districts for lands or properties within the boundaries of the District.

Water Rate

For all water delivered Schedule A	$4.75 per acre-foot
For all water delivered Schedule B	$4.25 per acre-foot

Minimum Charge

The minimum charge for a delivery of water of "stock run" shall be $2.40 per day.

Schedule No. 1-A

Mesa Agricultural Service

Applicable to service for irrigation on mesa lands within the boundaries of the District. By "mesa lands" is meant all lands located above the 1030 contour line.

Water Rate

For the first 6 acre-feet per acre irrigated per year	$ 4.75 per acre-foot
For all over 6 acre-feet per acre irrigated per year up to and including 8 acre-feet per year	$ 9.50 per acre-foot
For all over 8 acre-feet per acre irrigated per year	$19.00 per acre-foot

Minimum Charge

The minimum charge for a delivery of water of "stock run" shall be $2.40 per day.

Special Conditions

(a) All lands receiving water service under this schedule shall comply in all respects with Regulation No. 19 of the "Rules and Regulations Governing Distribution and Use of Water" approved June 6, 1967.

(b) Where water service is furnished to mesa lands which are outside the boundaries of the District, the water rates shall be double those shown in this schedule. The minimum charge shall be $9.50 per day.

Schedule No. 2

Pump Service

Applicable to service to private pumping plants where water is taken from the canal of the District to be used for general irrigation for lands or properties within the boundaries of the District.

Annual Water Rate

Per acre irrigated from January 1 to May 31, 1977	5/12 (4 AF x $4.25)	$ 7.08
Per acre irrigated from June 1 to December 31, 1977	7/12 (4 AF x $4.75)	$11.08
Per acre irrigated from and after January 1, 1978	(5 AF x $4.75)	$23.75 per year
Per acre irrigated from and after January 1, 1979	(6 AF x $4.75)	$28.50 per year

Schedule No. 2 (Cont.)

Special Conditions

(a) Effective January 1, 1978, all power pumping costs associated with the delivery of water for irrigation purposes covered by schedule No. 2 shall be borne by Imperial Irrigation District, except any power costs for sprinkler irrigation systems shall be borne by the water user.

Schedule No. 3

Pipe Service

Applicable to service from any pipes which are installed to take water by gravity flow only from the canals of the District for general use.

Annual Charge

(a)	For pipes with a diameter of 2 inches or less	$27.00 per year
(b)	For pipes with a diameter of over 2 inches and not exceeding 6 inches, per acre served	$18.00 per year

Annual Minimum Charge

For pipes with a diameter of over 2 inches and not exceeding 6 inches, the minimum charge for each and every service connected shall be	$36.00 per year

Special Conditions

(a) Service to Governmental Agencies Located Outside the Boundaries of the District. When a governmental agency has an installation located outside the boundaries of the District that receives water service by a service pipe, the annual and minimum charge shall be double those shown above.

(b) In the event any of the above pipes serve more than one water user, each additional water user shall be subject to the annual charges provided for in this schedule.

(c) Pump accounts used for water service to cattle and/or feed yards shall be charged on the basis of scheduled 3 (b) whether water delivery is made by pipe and/or otherwise.

(d) Water service to small acreages, not otherwise provided for in schedule No. 5, shall be charged on the basis of schedule 3 (b) or on the minimum charge basis, whichever is applicable.

Schedule No. 4

Wholesale Service

Applicable to water service to water users' associations, only, for commercial and industrial purposes.

Water Rate

For all water delivered	$4.75 per acre-foot

Special Conditions

(a) Annual Rate Based on Gross Acreage. In those cases, where due to conditions existing in the customer's facilities for handling water, it is impractical for the District to install water measuring equipment, water service applicable to this schedule shall be furnished on an annual charge per acre as follows:

Water Charge

For gross acreage of area served, per acre	$38.50 per year

Annual Minimum Charge

Annual minimum charge to any water users' association shall be	$77.00 per year

Schedule No. 5

Miscellaneous Service

Applicable to water service to schools, churches, cemeteries, experimental farms, golf courses, and recreational activities directly connected with such agencies.

Rate

(a) For school grounds, church yards, cemeteries, hospitals, agricultural experimental farms operated by public agencies, and other similar uses by public agencies, none of which are in excess of 40 gross acres, water shall be delivered without charge except as provided by schedule 6 or 7.

(b) For service to cemeteries and agricultural experimental farms in excess of 40 gross acres, all water delivered will be charged for at the rates stipulated under schedule No. 1, "General Agricultural Service".

Schedule No. 5 (Cont.)

(c) Water service to golf clubs and for similar organized recreational activities shall be furnished at a rate of $9.50 per year for each acre irrigated.

Special Conditions

(a) Restriction of Use. Water delivered under this schedule shall be used exclusively for purposes directly connected with the functions of the user. Where water so delivered is used for any other purposes, the regular charges under the applicable schedule shall apply.

(b) Water Service - Small Acreages. Except as provided for herein, any water user receiving water directly or indirectly, from the District, and said water user not otherwise subject to a water rate for such water schedule shall be charged as provided for in schedule No. 3, "Pipe Service".

BE IT FURTHER RESOLVED that said rates shall supersede all previous rates under the same schedules and shall be in effect until the further notice of the Board.

BE IT FURTHER RESOLVED by this resolution that Irrigation Capital Improvement Fund as established by Resolution 35-75 on June 10, 1975, to be maintained for a period of three years if not otherwise cancelled beforehand, is to remain in effect and undisturbed for the duration of the concrete lining program.

BE IT FURTHER RESOLVED by this resolution that the Water Conservation Fund account and the work to be performed as a result thereof as established by Resolution 49-76 dated July 13, 1976, shall remain in full force and effect.

NOW, THEREFORE, on motion of Director Thompson, seconded by Director Galleano, BE IT HEREBY RESOLVED that this resolution be passed on this 31st day of May, 1977.

IMPERIAL IRRIGATION DISTRICT

By _____ President

By _____ Secretary

RESOLUTION NO. 114-78

WHEREAS, Resolution 45-76 dealing with the matter of water conservation incorporates a practice which deals with the application of a penalty charge for water used in excess of the quantity required by the land under certain circumstances as defined by practice No. 4 of said resolution; and

WHEREAS, it is the desire of the Board of Directors to assist the landowners as operators, tenants, or both with the method required to attain a high degree of seed germination; and

WHEREAS, it is an accepted practice that certain lands--even though all of the conservation methods known to said operators are used such as overpour weirs, earthen dike dams, proper furrows, furrow sizing, slopes, and the use of irrigators--cannot obtain quality germination without proper water absorption by the soil for certain periods of time; and

WHEREAS, it is the desire of the District to afford all landowners--whether they be operators, tenants, or both--the ability to obtain the highest degree of seed germination attainable and, therefore, is willing to waive certain charges imposed by practice No. 4 to the extent that each owner, tenant, or operator use all available means and methods of water conservation referred to hereinabove on all lands operated and as required to prevent the application of the penalty provided for by practice No. 4 by fully complying with the intended purpose of said water conservation practice.

NOW, THEREFORE, on motion of Director Singh, seconded by Director Thompson, BE IT HEREBY RESOLVED that the operating department shall instruct the appropriate water regulating investigators to apply the exception as outlined under practice No. 4 as specified herein to lands being irrigated during the periods of seed germination only, on the basis of one irrigation per crop, after which the land affected shall be subject to the full force and effect of practice No. 4 in its original form.

PASSED AND ADOPTED this 29th day of December, 1978.

IMPERIAL IRRIGATION DISTRICT

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO CALIFORNIA

By Ismael Cuevas
President

By Larry E. Beck
Secretary

RESOLUTION NO. 1-79

WHEREAS, a review of Imperial Irrigation District accounting records indicates that the series of separate water fund accounts are quite numerous from the standpoint of administration; and

WHEREAS, an Irrigation Capital Improvement Fund has heretofore been established to fund the District's portion of the concrete lining program costs; and

WHEREAS, a 13-Point Water Conservation Program was adopted by the Board of Directors on July 1, 1976, and a Water Conservation Fund was established to fund the same; and

WHEREAS, Point 9 of the Water Conservation Program provides for the "continuation of the concrete lining program"; and

WHEREAS, a significant advantage can be obtained by consolidating the Irrigation Capital Improvement Fund with the Water Conservation Fund without losing the identity or purpose of these closely related funds.

NOW, THEREFORE, on motion of Director Mitchell, seconded by Director Edwards, BE IT HEREBY RESOLVED that effective January 1, 1979, the functions formerly funded by the Irrigation Capital Improvement Fund and Water Conservation Fund be combined and the funds heretofore collected and deposited in the Irrigation Capital Improvement Fund shall be deposited in the General Fund - Water, with the Irrigation Capital Improvement Fund being dissolved effective immediately.

BE IT FURTHER RESOLVED that the functions supported by both the Irrigation Capital Improvement Fund and Water Conservation Fund shall continue on the same basis as originally planned and that the respective programs will henceforth be funded from the Water Conservation Fund.

PASSED AND ADOPTED this 9th day of January, 1979.

IMPERIAL IRRIGATION DISTRICT

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO, CALIFORNIA

By W. R. Condit
President

By Larry E. Beck
Secretary

RESOLUTION NO. 49-80

WHEREAS, the Board of Directors of Imperial Irrigation District has heretofore approved resolution No. 45-76 adopting a 13-item schedule of water conservation practices; and

WHEREAS, On June 12, 1979, the Board of Directors endorsed the formation of a "Water Conservation Advisory Board" to evaluate the District's program of water conservation practices; and

WHEREAS, said Water Conservation Advisory Board has met, conferred, and adopted a resolution setting forth a 21-point water conservation program for recommendation to the District's Board of Directors for acceptance; and

WHEREAS, a public hearing to receive public comment on the 21-point program was duly scheduled, noticed, and conducted on May 19, 1980, and continued on June 10, 1980.

NOW, THEREFORE, on motion of Director Condit, seconded by Director Mitchell, BE IT HEREBY RESOLVED that effective July 1, 1980, the modified version of the Water Conservation Advisory Board's 21-point program is adopted as set forth in its entirety below:

1. The District shall establish a penalty of one hundred dollars ($100.00) for the unauthorized adjusting of delivery gates which results in a change in the amount of the water being delivered.

   Furthermore, whenever a water order is in the process of being pumped through a sprinkler or gated pipe system and the operator-user experiences a mechanical failure of the subject equipment, said operator-user shall be permitted to discontinue his water delivery for a period of not more than three (3) hours. The free time permitted under this schedule shall be considered as separate instances but in no event shall the combined hours so considered exceed three (3) hours before a triple charge is to be assessed.

2. The concept of installing gate control devices of a standard design is recommended and supported, such devices to be installed on structures accomodating gates which are owned, operated and maintained, as well as regulated, under the jurisdiction of the District and its personnel.

3. Application of the assessment charge shall apply on the same basis to all types of irrigation, with the following exceptions:

   (a) The percentages of surface runoff allowed when water is being used to irrigate plowed or flat unseeded ground shall be five percent (5%) for the last day of said irrigation and zero percent (0%) for any previous days.

   (b) When water is being run in furrows to germinate crop seeds and establish a stand, no assessment charge shall be made unless one of the two consecutive measurements showing fifteen percent (15%) or more runoff is made between 12:00 noon and 6:00 p.m.

4. In the event a water user is receiving more than his confirmed order, said surplus shall be subtracted from his surface runoff for the purpose of determining if his runoff is excessive.

5. In no event shall any water user be assessed unless his runoff is fifteen percent (15%) or more of his running order irrespective of the quantity of water the user is receiving.

6. Any surface runoff measurement made within four (4) hours after the District has reduced the quantity of water delivered shall apply to the order in effect before said change.

7. The application of an assessment charge based on waste measured after the delivery gate is closed shall apply on the same basis as when water was actually running. Any assessment made after the gate is closed shall be based on the order last running.

8. In no event shall the user pay more than triple the normal charge for water, except when he adjusts the delivery gate without permission.

9. All net proceeds from surface runoff assessment charges shall go into a special fund for conservation purposes other than the concrete lining of ditches.

10. All District personnel whose duties include checking of surface runoff will initial any waste assessment sheets issued.

11. Changes can be made for the last day of a run by notifying the District not later than 3:00 p.m. of the preceding day.

12. When a water user requests an adjustment in the quantity of water delivered not to exceed two (2) feet, the District shall be obliged to honor the same if it is within the ability of the District's system to accommodate such request and the water user notifies the zanjero in advance of beginning his daily run. The zanjero of said run shall obtain approval to make said change from his respective superior or section.

13. A reduction in the water order shall be made to apply to the last twelve (12) hours water is run, providing that the District is notified in advance but not later than 3:00 p.m. preceding the time the order is changed. No penalty shall be charged for said reduction as long as the same does not exceed fifty percent (50%) or five (5) feet of the order as confirmed, whichever is less.

14. By notifying the District before 3:00 p.m. orders can be adjusted for the last twelve (12) hours of the run, up to fifty percent (50%) of the confirmed order or five (5) feet, whichever is less.

15. Finish heads can be ordered up to 3:00 p.m. of the day preceding the day of delivery.

16. By notifying the District before 7:30 a.m. of the last day of a run, an order can be adjusted up to fifty percent (50%), without penalty.

17. One-day orders shall be checked by the appropriate District employees on the same basis as any other water order. For the application of the assessment charge, the first waste measurement shall not be made later than eighteen (18) hours after the beginning of the day's water delivery.

18. The District shall secure whatever additional radio equipment that is necessary to improve communications between the farmers and Water Department personnel.

19. The Water Department of the District shall make six (6) wastewater recorders available to be installed at various locations within the service area boundaries as defined.

20. The District shall prepare a monthly water information bulletin for distribution which shall include information submitted to the District by a committee to be appointed by the Water Conservation Advisory Board, and from other sources as required for the purpose of assisting the water user in using all water beneficially.

21. Routine canal cutouts shall be accomplished once every eight (8) weeks. except when special circumstances require more frequent cutouts.

Recommendations 11 through 16 inclusive are approved on the basis that the same be put into effect on a temporary but limited basis to ascertain whether or not the recommendations as written will succeed and/or whether the same should be modified, amended, or deleted.

BE IT FURTHER RESOLVED that the above stated program is a supplement to and augmentation of the original 13-item program. In the event of a perceived conflict between the two the sense of the 21-point program shall prevail.

BE IT FURTHER RESOLVED that the program shall not operate in such a way as to endanger any District structure or facility, and the results and problems, if any, shall be reviewed monthly with the Water Conservation Advisory Board.

PASSED AND ADOPTED THIS 24th day of June 1980,

IMPERIAL IRRIGATION DISTRICT

By _____ President

By Larry E. Beck Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 80-80

WHEREAS, Imperial Irrigation Distict over the years has constructed its water facilities consisting of main canals, laterals, surface and main drains, including control structures located therein, as well as regulating reservoirs which are appurtenant parts of the main canal system for water regulation and other purposes; and

WHEREAS, over this period of time; namely, 1911-1980, a period of 69 years, the Board of Directors has named each facility in keeping with the desire of its members and the constituency they represent to name each facility appropriately so that each main canal, canal surface, or main drain is identified by reference and otherwise; and

WHEREAS, the District has heretofore constructed two reservoirs; one on the east side and one on the west side of the District service area and named the same after persons who have distinguished themselves in the development and/or the operation of this District's water system; and

WHEREAS, the Board of Directors has authorized the construction of a new reservoir to be known as and located at the No. 4 Heading on the Central Main Canal and desires to name this facility in honor of an employee who has served the District in the capacities as Carpenter Helper, Carpenter Foreman, Division Watermaster, Division Field Foreman, Assistant Division Superintendent, Division Superintendent, District Construction Superintendent-Irrigation, Assistant Superintendent Water Distribution, Superintendent of Irrigation and Drainage, Superintendent of Water, Manager - Water Department, and Consultant - Water Department. Said service in all capacities representing a period of 42+ years.

NOW, THEREFORE, on motion of Director Edwards, seconded by Director Mitchell, BE IT HEREBY RESOLVED that No. 4 Heading Reservoir shall be officially named as the O. L. "Oscar" Fudge Reservoir in recognition of his unique and most outstanding contribution made to the District, the landowners, governmental officials, and public alike.

BE IT FURTHER RESOLVED that a copy of this resolution, suitably inscribed, be furnished to Mr. O. L. "Oscar" Fudge for his record.

PASSED AND ADOPTED this 9th day of September, 1980.

IMPERIAL IRRIGATION DISTRICT

By _____ President

By _____

RESOLUTION NO. 87-80

WHEREAS, Imperial Irrigation District has heretofore passed Resolution No. 49-80 which recognizes the 21-point water conservation program recommended to the Board of Directors of Imperial Irrigation District by the Water Conservation Advisory Board; and

WHEREAS, the Water Conservation Advisory Board has prepared a resolution recommending to the Board of Directors of Imperial Irrigation District to consider certain changes in keeping with the provisions of said resolution by changing Rule No. 3, Rule No. 13, and conditions regarding Rules Nos. 11-16 following Rule No. 21.

NOW, THEREFORE, on motion of Director Edwards, seconded by Director Mitchell, BE IT HEREBY RESOLVED that effective October 1, 1980 Rule No. 3 and Rule No. 13 shall be changed to read as follows:

3. Application of the assessment charge shall apply on the same basis to all types of irrigation, with the following exceptions:

   (a) The percentages of surface runoff allowed when water is being used to irrigate plowed or flat unseeded ground shall be five percent (5%) for the last day of said irrigation; no measurable waste shall be allowed for any previous days.

   (b) When water is being run in furrows to germinate crop seeds and establish a stand, no assessment charge shall be made unless one of the two consecutive measurements showing fifteen percent (15%) or more runoff is made between 12:00 noon and 6:00 p.m.

13. A reduction in the water order shall be made to apply to the last twelve (12) hours water is run, providing that the District is notified in advance but not later than 3:00 p.m. preceding the time the order is changed. No penalty shall be charged for said reduction as long as the same does not exceed fifty percent (50%) or five (5) feet of the order as confirmed, whichever is less. Water returned with notice after 3:00 p.m. or which exceeds the quantity that this rule authorizes shall be subject to an assessment equal to two times the regular water rate.

Rules Nos. 11, 12, 14, 15, and 16 shall continue to be considered on a temporary but limited basis to further ascertain whether or not these particular temporary rules, as written, will eventually succeed or be modified, amended, or deleted.

PASSED AND ADOPTED this 7th day of October, 1980.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

RESOLUTION NO. 8-81

RESOLUTION OF NECESSITY TO ACQUIRE AN INTEREST IN
. REAL PROPERTY BY EMINENT DOMAIN

WHEREAS, in connection with the operations of the Imperial Irrigation District, the public interest and necessity require the acquisition, construction and completion of a public improvement, namely, a regulation resevoir for the District's irrigation system; and

WHEREAS, California Water Code Section 22456 authorizes the Imperial Irrigation District to acquire property by eminent domain; and

WHEREAS, the public interest and necessity require the project; the project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury; and the property sought to be acquired is necessary for the project; and

WHEREAS, the record owner of the leasehold interest of the property to be acquired receive notice, as provided by law, of the District's intent to acquire property by eminent domain and said person was personally present at the hearing referred to in said notice of intent; and

WHEREAS, the property to be acquired is a leasehold interest, containing approximately three (3) acres, and is located adjacent to the Central Main Canal and is more particularly described below.

NOW, THEREFORE, BE IT RESOLVED that the public interest and necessity require the acquisition by the Imperial Irrigation District of the leasehold interest of the hereinafter described real property for the public improvement, namely, a regulating resevoir for the District's irrigating system.

BE IT FURTHER RESOLVED that the proposed public improvement is planned and located in a manner which will be most compa-

tible with the greatest public good and the least private injury.

BE IT FURTHER RESOLVED that the real property to be acquired is described as a leasehold interest and that portion of Tract 105, Township 14 South, Range 13 East S.B.B.&M., more particularly described as follows:

> Beginning at the intersection of the South line of said Tract with the center line of the Central Main Canal; thence North 41° 34' 01" East along said center line 39.41 feet; thence North 44° 56' 33" East along said center line 725.03 feet; thence South 00° 05' 52" East 542.57 feet to the South line of said Tract; thence South 89° 59' 22" West along said Tract line 539.23 feet to the Point of Beginning.

BE IT FURTHER RESOLVED that the attorneys for Imperial Irrigation District be and they are hereby authorized, directed and instructed to commence condemnation proceedings on behalf of Imperial Irrigation District to acquire in the name of Imperial Irrigation District the real property hereinabove described.

PASSED AND ADOPTED THIS 17th day of February, 1981.

IMPERIAL IRRIGATION DISTRICT

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO, CALIFORNIA

By _____
President

By _____
Secretary

RESOLUTION NO. 26-81

WHEREAS, the Water Code of the State of California provides among other things that each district shall establish equitable rules for the distribution and use of water and that any charges shall be distributed equitably as determined by the Board of Directors. Further, any district may, in lieu of levying assessments, fix and collect charges for any service furnished by the district including a stand-by charge, whether water is actually used or not; and

WHEREAS, the Constitution of the State of California mandates the conservative use of water and states that because of the conditions prevailing in the State, the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable and that all unreasonable use of water be prevented and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare; and

WHEREAS, the Board of Directors has heretofore approved Resolution No. 45-76 adopting a 13-item schedule of water conservation practices. The Board subsequently endorsed the formation of a Water Conservation Advisory Board to evaluate the District's program of water conservation practices, which resulted in a recommendation and subsequent adoption by the District Board of a 21-point water conservation program as detailed in Resolution No. 49-80 as a supplement to the original 13-item program; and

WHEREAS, prevailing circumstances have caused the Board of Directors to consider augmentation of several specific elements of the water conservation program; i.e., concrete lining of District laterals, East Highline Canal water recovery lines, and construction of regulating reservoirs; and

WHEREAS, it is deemed necessary to adjust water rate schedules including the water availability charge to provide revenue to finance the proposed expanded program. To this end a public hearing was duly noticed and held at 10:00 a.m., Tuesday, April 28,1981, to consider the proposed water rate increases.

NOW, THEREFORE, on motion of Director Gallegos, seconded by Director Moore, BE IT HEREBY RESOLVED that the following items herein set forth, in convenient form, represent the several actions of the Board of Directors in the adjourned Board meeting and workshop convened on May 1, 1981:

a. Increase the concrete lateral lining program by $800,000 annually.

b. Provide $500,000 annually to continue the East Highline water recovery program.

c. Accelerate the construction of water regulating reservoirs by $1,000,000 annually.

d. Employ and equip approximately 15 additional personnel (zanjeros, patrolmen, waste checkers) to improve water regulation on swing and graveyard shifts.

e. Employ a water conservation supervisor in Water Department to perform assignments in accordance with approved position description.

f. Enter into a 2-year irrigation scheduling demonstration program, purchase two (2) neutron probes for determining soil moisture content, and employ, train, qualify and license personnel to use the same to provide farmers with data to help them determine adequate irrigation needs.

g. Schedule sequential water deliveries to certain flat and/or bordered land where such crops as wheat, alfalfa or Bermuda grass are farmed and can be irrigated in this manner. Employ necessary personnel to assure successful application of this service on a limited and trial basis.

h. Schedule monthly meetings in appropriate locations to create better understanding between District directors, management/personnel and the water users in regard to their respective operations, including full discussion of the 21-point water conservation program and its intended purpose.

BE IT FURTHER RESOLVED, that the proposal to expand Item (4) of the 13-item water conservation practices be referred to the Water Conservation Advisory Board for study and recommendation; namely, to add the following sentence:

"Should it become necessary to levy assessments against surface field discharge measuring 15% or more on subsequent irrigation runs for any one (1) delivery gate in a calendar quarter, each successive assessment multiplier shall be increased by one (1); i.e., 3, 4, 5, etc."

BE IT FURTHER RESOLVED, that Item "i" below be added as follows:

i. Any water user who, in the opinion of the Water Department manager or his designee, installs a device to circumvent the waste water rules shall, following the completion of that irrigation, have the delivery gate locked until the device is removed.

BE IT FURTHER RESOLVED, that the following changes in the Water Rate Schedules be approved as shown, and that all revenue derived from the water rate increase in "j" below is to be deposited in a Special Water Conservation Fund specifically to cover costs of the expanded water conservation program.

j. Increase the basic rate by $1.00 per acre-foot from $6.50/A.F. to $7.50/A.F., effective July 1, 1981.

k. Increase annual water rate under Schedule No. 2, Pump Service, from (3 A.F./Ac. x $6.50/A.F. = $19.50/Ac.) to (3.0 A.F./Ac. x $7.50/A.F. = $22.50/Ac.), effective July 1, 1981, and charge waste assessments to Pump Service lands thereafter based on $7.50/A.F.

l. Rescind Schedule No. 7, Water Service Charge to Public Land, effective January 1, 1982.

PASSED AND ADOPTED this 12th day of May, 1981.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 34-81

WHEREAS, the Board of Directors of Imperial Irrigation District through adoption of Resolution Nos. 45-76 and 49-80 has effected a major water conservation program; and

WHEREAS, said program was further amended and enhanced by Resolution No. 26-81 adopted by the Board of Directors on May 12, 1981; and

WHEREAS, a proposed strengthening of Item 4 of the 13-Point Water Conservation Schedule was referred to the Water Conservation Advisory Board for study and recommendation. Said Advisory Board presented its recommendation to the Board of Directors by formal Resolution No. 81-2.

NOW, THEREFORE, on motion of Director Condit, seconded by Director Moore, BE IT HEREBY RESOLVED that effective July 1, 1981, Item 4 of the 13-Point Schedule of Water Conservation practices be amended by adding a second paragraph so that Item 4 will read in its entirety as follows:

"(4) An inventory of surface field discharge water will be taken daily and an assessment shall be levied against all discharges which equal 15% or more of the water being delivered and measurement thereof shall have been taken on two successive occasions not less than nine hours apart in a 24-hour period. The term assessment used herein shall mean the quantity of water ordered in second feet and reduced to acre-feet, times the scheduled water rate multiplied by 3 for the day in which the measurements were taken.

Should it become necessary to levy assessments against surface field discharge measuring 15% or more on subsequent irrigation runs for any one (1) delivery gate in a calendar quarter, each successive assessment multiplier shall be increased by one (1); i.e., 3, 4, 5, etc. The successive assessment multiplier shall not apply during the time ground is being irrigated for seed germination purposes. Immediately following stand establishment, the successive assessment multiplier shall be increased as indicated and shall apply to the land on which water is being used in the same manner as any other land receiving water."

PASSED AND ADOPTED this 9th day of June, 1981.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911

RESOLUTION NO. 56-81

WHEREAS, Imperial Irrigation District over the years has constructed various facilities consisting of main canals, laterals, surface and main drains, as well as regulating reservoirs for water conservation which are an appurtenant part of the main canal system for water regulation; and

WHEREAS, during this period, the Board of Directors from time to time has named each facility it possesses; i.e., main canal, canal, surface or main drain, with a name such as the Peach Canal, Plum Canal, Palmetto Canal, East Highline Canal, Westside Main Canal, Evergreen Canal, Central Main Canal, and the South Central Drain to name a few--each name being derived from a well-known plant, tree or shrub designated by the location of the facility being named, such as the East Highline Canal being on the east side of the valley as opposed to the Westside Main Canal serving the west side of the valley; and

WHEREAS, the water regulatory reservoirs for conservation purposes were constructed for their intended purpose, and it was the Board's desire that each reservoir so constructed be named in honor of citizens of Imperial Valley who have performed extraordinarily; and

WHEREAS, the District to date has constructed the Nectarine Reservoir on the East Highline Canal and named the same as the Kakoo Singh facility; the No. 8 Heading Reservoir on the Westside Main Canal which bears the name of the late J. M. Sheldon, long time employee of the District and manager of the water department of the District; and the reservoir now under construction at No. 4 Heading on the Central Main Canal which bears the name of O. L. "Oscar" Fudge, former manager of the water department who served the District in an outstanding way for over 40 years; and

WHEREAS, the Board of Directors adopted a resolution authorizing the construction of the Redwood Canal Heading Reservoir which is now programmed to be completed during the latter part of this year and/or the forepart of 1982; and

WHEREAS, the Board of Directors of Imperial Irrigation District believes that an appropriate way to recognize an outstanding citizen who has served the county, the district, and the cities--including the people who reside therein--

so well and for so many years and, as a consequence, the Board of Directors desires to name said reservoir in the honor and memory of the late Herman "Red" Sperber, former Imperial County Supervisor from the townsite of Holtville and from Division 5 of the Board of Supervisors of Imperial County, for he was a farmer and a water user who was well-versed in the value of reservoirs and the purpose for which they stand in fulfilling the obligation of water conservation in keeping with the rules and regulations of the concept known as beneficial use; and

WHEREAS, the Board of Directors desires to pay tribute to Mr. Sperber's untiring, loyal, and dedicated term of service to the people of Imperial County.

NOW, THEREFORE, on motion of Director Gallegos, seconded by Director Condit, BE IT HEREBY RESOLVED that the reservoir referred to herein shall be known as the "Herman 'Red' Sperber" Water Conservation Storage Reservoir and an appropriate plaque and accommodating foundation shall be constructed and installed at the reservoir site indicating this fact.

PASSED AND ADOPTED this 1st day of September, 1981.

IMPERIAL IRRIGATION DISTRICT

By _____
Vice President

By _____
Asst. Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

Resolution No. 68-81

WHEREAS, the Board of Directors of Imperial Irrigation District through adoption of various resolutions has effected a major water conservation program; and

WHEREAS, said program has been amended from time to time by resolutions adopted by the Board of Directors, as the record of the Board indicates; and

WHEREAS, a proposed amendment to Item 3 has been adopted by the Water Conservation Advisory Board, for recommendation to the Board of Directors of Imperial Irrigation District, by its adoption of WCAB Resolution No. 81-4 dated October 8, 1981.

NOW, THEREFORE, on motion of Director Gallegos, seconded by Director Condit, BE IT HEREBY RESOLVED that effective October 1, 1981, Item 3 of the 21-point schedule of the water conservation program be amended by changing the language of said Item 3 to read in its entirety as follows:

3. Application of the assessment charge shall apply on the same basis to all types of irrigation (including the use of water ordered for mulching purposes with proper notice), with the following exceptions:

   (a) The percentages of surface runoff allowed when water is being used to irrigate plowed or flat unseeded ground shall be five percent (5%) for the last day of said irrigation; no measurable waste shall be allowed for any previous days.

   (b) When water is being run in furrows to germinate crop seeds and establish a stand, no assessment charge shall be made unless one of the two consecutive measurements showing fifteen percent (15%) or more runoff is made between 12:00 noon and 6:00 p.m.

PASSED AND ADOPTED this 20th day of October, 1981.

IMPERIAL IRRIGATION DISTRICT

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO CALIFORNIA

By _____
President

By Larry E. Beck

RESOLUTION NO. 3-82

RESOLUTION OF NECESSITY TO ACQUIRE AN INTEREST IN REAL PROPERTY BY EMINENT DOMAIN

WHEREAS, in connection with the operations of the Imperial Irrigation District, the public interest and necessity require the acquisition, construction and completion of a public improvement, namely, a regulating reservoir for the District's irrigation system; and

WHEREAS, California Water Code Section 22456 authorizes the Imperial Irrigation District to acquire property by eminent domain; and

WHEREAS, the public interest and necessity require the project; the project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury; and the property sought to be acquired is necessary for the project; and

WHEREAS, the record owner of the property to be acquired received notice, as provided by law, of the District's intent to acquire the property by eminent domain and said person was personally present at the hearing referred to in said notice of intent; and

WHEREAS, the property to be acquired is located adjacent to the Redwood Canal and contains approximately 38 acres and is more particularly described below.

NOW, THEREFORE, BE IT RESOLVED, that the public interest and necessity require the acquisition by the Imperial Irrigation District of the hereinafter described real property

for a public improvement, namely, a regulating reservoir for the Imperial Irrigation District's irrigation system.

BE IT FURTHER RESOLVED, that the proposed public improvement is planned and located in a manner which will be most compatible with the greatest public good and the least private injury.

BE IT FURTHER RESOLVED, that the real property to be acquired is described as follows:

> The East Half of Tract 49, Township 15 South, Range 15 East, S.B.B.&M., lying Northwest of the Redwood Canal, located in the County of Imperial, State of California.

BE IT FURTHER RESOLVED, that the attorneys for the Imperial Irrigation District be and they are hereby authorized, directed and instructed to commence condemnation proceedings on behalf of the Imperial Irrigation District to acquire in the name of the Imperial Irrigation District the real property hereinabove described.

PASSED AND ADOPTED this 5th day of January, 1982.

IMPERIAL IRRIGATION DISTRICT

By Harold L Wren
President

By Larry E. Beck
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 15-82

RESOLUTION OF NECESSITY TO ACQUIRE AN INTEREST IN REAL PROPERTY BY EMINENT DOMAIN

WHEREAS, in connection with the operations of the Imperial Irrigation District, the public interest and necessity require the acquisition, construction and completion of a public improvement, namely, a regulating reservoir for the District's irrigation system; and

WHEREAS, California Water Code Section 22456 authorizes the Imperial Irrigation District to acquire property by eminent domain; and

WHEREAS, the public interest and necessity require the project; the project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury; and the property sought to be acquired is necessary for the project; and

WHEREAS, the record owner of the property to be acquired received notice, as provided by law, of the District's intent to acquire the property by eminent domain and said person was personally present at the hearing referred to in said notice of intent; and

WHEREAS, the property to be acquired is located adjacent to the Redwood Canal and contains approximately 38 acres and is more particularly described below.

NOW, THEREFORE, BE IT RESOLVED, that the public interest and necessity require the acquisition by the Imperial Irrigation District of the hereinafter described real property

for a public improvement, namely, a regulating reservoir for the Imperial Irrigation District's irrigation system.

BE IT FURTHER RESOLVED, that the proposed public improvement is planned and located in a manner which will be most compatible with the greatest public good and the least private injury.

BE IT FURTHER RESOLVED, that the real property to be acquired is described as follows:

PARCEL 1: An undivided 1/4 interest in and to that portion of Lot 4, Section 20, Township 15 South, Range 15 East, S.B.M., County of Imperial, State of California, according to the Official Plat thereof, lying West of the Redwood Canal as said canal was located August 6, 1981.

PARCEL 2: An undivided 1/4 interest in and to that portion of the Southeast Quarter of the Northwest Quarter of Section 20, Township 15 South, Range 15 East, S.B.M., in the County of Imperial, State of California, according to the Official Plat thereof, lying West of the Redwood Canal, as said canal was located August 6, 1981 and North of the Rose Ditch as said ditch was located August 28, 1929.

PARCEL 3: An undivided 3/4 interest in and to that portion of Lot 4, Section 20, Township 15 South, Range 15 East, S.B.M., in the County of Imperial, State of California, according to the Official Plat thereof, lying West of the Redwood Canal as said canal was located August 6, 1981.

PARCEL 4: An undivided 3/4 interest in and to that portion of the Southeast Quarter of the Northwest Quarter of Section 20, Township 15 South, Range 15 East, S.B.M., in the County of Imperial, State of California, according to the Official Plat thereof, lying West of the Redwood Canal, as said canal was located August 6, 1981 and North of the Rose Ditch as said ditch was located August 28, 1929.

BE IT FURTHER RESOLVED, that the attorneys for the Imperial Irrigation District be and they are hereby authorized,

directed and instructed to commence condemnation proceedings on behalf of the Imperial Irrigation District to acquire in the name of the Imperial Irrigation District the real property hereinabove described.

PASSED AND ADOPTED this 2nd day of February, 1982.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 30-83

WHEREAS, the Board of Directors of Imperial Irrigation District has heretofore passed and adopted Rules and Regulations Governing the Distribution and Use of Water pursuant to Section 22257 of the Water Code of the State of California; and

WHEREAS, said rules provide the basis for the District's concrete lateral and canal lining program; and

WHEREAS, the program has been well accepted by landowners and continues to be viable, both in the area of water conservation and maintenance of the system; and

WHEREAS, recent studies by Federal and State agencies conclude that lining canals is one of the most effective conservation measures; and

WHEREAS, recent pressures on the farm economy have affected the continuity of the concrete lining program; and

WHEREAS, various landowners have indicated an interest in participating in concrete lining if reasonable financing were available;

NOW, THEREFORE, on motion of Director Moore, seconded by Director Allen, BE IT HEREBY RESOLVED that Regulation No. 34 of the "Rules and Regulations Governing the Distribution and Use of Water and Construction, Operation and Maintenance of the Canal and Drainage System of Imperial Irrigation District" shall be amended and revised effective May 1, 1983, to read in its entirety as follows:

Regulation No. 34.
Rearrangement and Concrete Lining and/or Exclusion of Irrigation Lateral Canals:

(a) General.

In order to reduce maintenance costs of, right-of-way requirements for, and loss of water by seepage from certain of its irrigation laterals, the District may undertake the rearrangement and concrete lining of such facilities on the general basis of costs being apportioned between the District and the landowner benefited thereby as set forth herein.

(b) Special Conditions.

1. This regulation is applicable to any lateral canal irrespective of capacity and/or length insofar as it may qualify fully with paragraph "a. General," above.

   It may apply to rearrangement of facilities where the District will continue to operate and maintain the same, and paragraph 6 will apply in those cases where the landowner proposes to assume operation and maintenance subsequent to said arrangement.

2. District will pay the entire cost of engineering, including surveys and profiling as required, the normal backfilling of the lateral, compacting said fill, and installation of joint-sealing compound.

3. District will pay 70 percent of the cost of concrete placement.

4. Landowner will pay 30 percent of the cost of concrete placement, but in no instance will landowner pay more than $3.00 per lineal foot for one side or $4.00 per lineal foot for both sides.

5. District will assume the full cost of replacing any existing District structures which would normally have required replacement. The removal or replacement of any existing facilities which belong to the landowner, the removal of any abandoned facilities, and any crop damage, shall be the expense of the landowner. Replacement of any existing District facility, which is occasioned by the necessity to relocate or realign the District lateral for the benefit of the landowner, shall be the expense of the landowner.

6. In those cases where the canal to be concrete lined and/or rearranged is on the terminal end, and the landowner desires to take over the operation and maintenance of said facility and, as a consequence, further desires to contract and perform the work which falls within the scope of this regulation, the District will pay 70 percent of the cost of said work or an amount agreed upon which represents the District's appropriate share of the cost of said work, including tie-ins at each end, and will quitclaim to the landowner any rights-of-way for facilities abandoned by the District.

7. Landowner shall furnish, at no cost to the District, adequate and satisfactory rights-of-way for all facilities on his property which are to be maintained by the District.

8. When deemed necessary by the District, landowner will be required to execute an appropriate agreement in form suitable for recording.

9. District will determine which works are to be performed directly by its forces or under contract with the District, and which works, if any, may be performed by the landowner or his contractor.

(c) Procedure.

1. Written application shall be made by landowner in each individual case, in sufficient detail to permit a study and evaluation of the proposed rearrangement.

2. If the proposal falls wihin the scope of this regulation, District will make an engineering cost analysis and feasibility study, which will be the basis for acceptance or rejection of the proposal. Each proposal will be subject to approval by the Board of Directors.

3. Upon acceptance of any proposal, the District will prepare all necessary rights-of-way deeds and agreements, if required. The landowner will be required to execute such deeds and agreements, if required, and to deposit with the District the estimated cost of his pro rata share based on the formula referred to herein. Financing of landowner's costs may be arranged under (d) below.

4. District will, insofar as its operating responsibilities permit, perform its work contemplated hereunder in reasonable conformity with a prearranged schedule, to insure a minimum of interference with both the District's and the landowner's operations. Upon completion of such work, the landowner will be refunded any unused portion of his advance deposit, or will be billed for his portion of any excess cost above the estimate. In the event the landowner has arranged for District financing, the principal amount will be adjusted to the landowner's pro rata share of the final cost of the project.

(d) Financing.

1. The District will offer financing in the maximum amount of $50,000 to any landowner whose land is contiguous to a District canal or lateral, which should be concrete lined in the interest of water conservation and economy of installation and to avoid scattered sections of uncompleted lining.

2. A minimum down payment amounting to 10 percent of the estimated cost to the landowner will be required. The remaining balance to be loaned shall be paid in equal installments over a period of up to 10 years plus a rate of interest equal to that charged by the Federal Land Bank.

3. In the event that any such payment of principal and interest remain unpaid when due, the same will constitute a lien on that land as provided in Water Code Section 25806.

PASSED AND ADOPTED this 5th day of April, 1983.

IMPERIAL IRRIGATION DISTRICT

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO, CALIFORNIA

By _____
President

By _____
Secretary

RESOLUTION NO. 8-84

WHEREAS, the Imperial Irrigation District is responsible for delivering Colorado River water to certain lands within Imperial County for agricultural, domestic and industrial uses; and

WHEREAS, the District has rights to certain portions of the waters of the Colorado River, such rights having been perfected at the beginning of this Century and having been recognized by Congress, the Supreme Courts of the United States and the State of California, and other individuals and entities; and

WHEREAS, the District, formed under the laws of the State of California, operates and maintains a vast system of water control, conveyance and distribution facilities, and an extensive drainage network; and

WHEREAS, it is the policy of the United States and the State of California that the general welfare requires that water resources be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented; and

WHEREAS, it is also the policy of the United States and the State of California that full utilization of water resources requires that a maximum effort must be directed toward maintaining the highest possible water quality; and

WHEREAS, the District believes that the members of the Seven Party Agreement should use their best efforts to see that all Colorado River water to which they are entitled be put to beneficial use to the fullest extent possible and that all appropriate measures are implemented to maintain salinity concentration at or below levels presently found in the lower Colorado River; and

WHEREAS, the Board of Directors of the District, in recognition of federal and state policy of water conservation,

has previously adopted structural and non-structural water conservation programs; and

WHEREAS, the District recognizes that additional conservation measures might make more water available for beneficial use within the District or be available to lower priority users according to the Supreme Court ruling in Arizona v. California and the provisions of the Seven Party Agreement.

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Imperial Irrigation District shall expand its water conservation programs including, but not limited to, increased water conservation educational programs for valley farmers, increased emphasis on canal lining, water regulation reservoirs, and other structural improvements with the goal of reducing inflow to the Salton Sea 100,000 acre feet by July 1, 1985.

2. That the Bureau of Reclamation continue with its evaluation of water conservation opportunities in the District in order to determine the amount of water which could be salvaged and the cost-benefit of the conservation methods recommended.

3. The District is willing, and invites the other members of the Seven Party Agreement, the Bureau of Reclamation and beneficial users, including geothermal industry, within the District, to meet with officials of the Imperial Irrigation District to discuss water conservation opportunities in Imperial Valley, including the cost and method of payment for such conservation, and the potential use by the District and other members of the Seven Party Agreement of the water thus conserved.

PASSED AND ADOPTED this 24th day of January, 1984.

IMPERIAL IRRIGATION DISTRICT ORGANIZED JULY 25, 1911 EL CENTRO, CALIFORNIA

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

RESOLUTION NO. 9-84

WHEREAS, the Board of Directors of Imperial Irrigation District has heretofore passed and adopted Rules and Regulations Governing the Distribution and Use of Water pursuant to Section 22257 of the Water Code of the State of California, and specifically Regulation No. 34, which provides for the rearrangement and concrete lining and/or exclusion of irrigation lateral canals; and

WHEREAS, the landowner has been paying a proportionate share of the cost of concrete lining of District lateral canals adjacent to the individual's property; and

WHEREAS, for various reasons some landowners have not seen fit to participate in the lining program, which has led to the piecemeal and incomplete lining of some laterals; and

WHEREAS, this method of selecting sections of laterals for lining has not been conducive to the most economic and efficient use of manpower, equipment and funds; and

WHEREAS, it is the desire of the Board of Directors to increase efficiency and accelerate the lateral lining program in the interest of water conservation.

NOW, THEREFORE, on motion of Director Benson, seconded by Director Edwards, BE IT HEREBY RESOLVED that Regulation No. 34 of the Rules and Regulations Governing the Distribution and Use of Water be revised to eliminate the landowner contribution.

Available resources may be concentrated upon those reaches of lateral canals most susceptible to the control of seepage, improvement of operation and maintenance efficiencies, control of hydrilla, and to closing of gaps between previously lined sections.

Said revised Regulation No. 34 is attached hereto and made a part hereof as Exhibit A.

BE IT FURTHER RESOLVED that, with the exception of public agencies, monetary landowner contributions toward the concrete lining of adjacent District laterals completed during the past ten years, 1974 through 1983, inclusive, be reimbursed dollar for dollar to the current owner without any consideration for interest; and further, that such money amount be reduced by 10 percent for each full calendar year or major fraction thereof that said lining has been installed. Reimbursements will be made over a 5-year period as funds are available.

PASSED AND ADOPTED this 24th day of January, 1984.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By Larry E. Beels
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

REGULATION NO. 34

Rearrangement and Concrete Lining and/or Exclusion of Irrigation Lateral Canals:

(a) General

In the interest of water conservation, improvement of operation and maintenance efficiencies, the control of hydrilla, and reduction of right-of-way requirements; the District may undertake the rearrangement and concrete lining of its irrigation lateral canals at no cost to the adjacent landowner except as set forth herein.

(b) Special Conditions

1. This regulation is applicable to any lateral canal irrespective of capacity and/or length insofar as it may qualify fully with paragraph "(a) General," above.

2. This regulation may apply to rearrangement of facilities where the District will continue to operate and maintain the same; and paragraph 5 will apply in those cases where the landowner proposes to assume operation and maintenance subsequent to said arrangement.

3. In those cases where additional earthfill material is necessary, the District will make arrangements with the adjacent landowner to acquire sufficient material to complete the project.

4. District will assume the full cost of replacing any existing District structures which would normally have required replacement. Replacement of any existing District facility which is occasioned by the necessity to relocate or realign the District lateral for the benefit of the landowner shall be the expense of the landowner.

5. In those cases where the canal to be concrete lined and/or rearranged is on the terminal end, and the landowner desires to take over the operation and maintenance of said facility and, as a consequence, further desires to contract and perform the work which falls within the scope of this regulation, the District will pay 100 percent of the cost of said work or an amount agreed upon which represents the District's appropriate share of the cost of said work, including tie-ins at each end, and will quitclaim to the landowner any rights-of-way for facilities abandoned by the District. Any additional features would be at the landowner's expense.

6. District will determine which works are to be performed directly by its forces or under contract with the District, and which works, if any, may be performed by the landowner or his contractor.

(c) Procedure

1. The District will prepare a proposal which will include an engineering cost analysis and feasibility study. Each proposal will be subject to approval by the Board of Directors.

2. Upon approval of any proposal, the District will prepare all necessary right-of-way deeds and agreements for execution by the landowner as may be required.

3. District will, insofar as its operating responsibilities permit, perform its work contemplated hereunder in a reasonable conformity with a prearranged schedule, to insure a minimum of interference with both the District's and the landowner's operations.

RESOLUTION NO. 38-84

WHEREAS, the Imperial Irrigation District is responsible for delivering Colorado River water to certain lands within Imperial County for agricultural, domestic and industrial uses; and

WHEREAS, the District, formed under the laws of the State of California, operates and maintains a vast system of water control, conveyance and distribution facilities, and an extensive drainage network; and

WHEREAS, the District has prior, perfected and adjudicated rights to certain portions of the waters of the Colorado River; and

WHEREAS, it is the policy of the United States and the State of California that the general welfare requires that water resources be put to beneficial use to the fullest extent of which they are capable; and

WHEREAS, the Board of Directors of the District, in recognition of federal and state policy of water conservation, has previously adopted structural and non-structural water conservation programs; and

WHEREAS, Board Resolution 8-84 recognizes that additional conservation measures might make more water available for beneficial use within the District or be available to lower priority users according to the Supreme Court ruling in Arizona v. California and the provisions of the Seven Party Agreement; and

WHEREAS, pursuant to Resolution 8-84, the District has

expanded its water conservation programs; and

WHEREAS, in response to a complaint filed by John Elmore alleging waste and unreasonable use of water by the District, the State Water Resources Control Board has concluded that the District's "failure to implement additional water conservation measures at this time is unreasonable and constitutes a misuse of water under Article 10, Section 2 of the California Constitution and Section 100 of the California Water Code;" and

WHEREAS, the State Water Resources Control Board has ordered that the District implement certain water conservation measures by February 1, 1985, and submit a progress report to the Board by October 1, 1984; and

WHEREAS, while the SWRCB's order is reasonably consistent with the District's water conservation policy, its conclusion that the failure to implement additional water conservation measures at this time is unreasonable and constitutes misuse, is not supported by the findings, not supported by the evidence, is in excess of the Board's jurisdiction, and is an abuse of discretion; and

WHEREAS, the primary responsibility for evaluating and implementing potential water conservation measures lies with the District Board of Directors and not the State Water Resources Control Board.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The District shall continue its implementation of its

expanded water conservation program.

2. The General Manager of the District shall determine and recommend to the District Board specific actions the District should take to:

(a) Maintain the present level of water service to its consumers;

(b) Coordinate with other responsibly interested entities (eg. the Colorado River Board of California, the Secretary of the Interior, the Bureau of Reclamation, parties to the Seven Party Agreement, the Department of Water Resources, the State Water Resources Control Board, the County of Imperial, the geothermal industry, Imperial Valley farmers, and all other persons and entities) to insure an exchange of data developed by water conservation studies within the Imperial Irrigation District by all interested parties and entities;

(c) Comply with the spirit of the State Water Resources Control Board June 21, 1984 Order;

(d) Define the parameters for negotiations with third parties who may be willing to provide financial assistance and incentives which will protect the water rights of the District but make possible increased beneficial use of the District's water right supplies from the Colorado River;

(e) Develop a program that will encourage investment by third parties which will make available to IID consumers the water they need for all beneficial uses at no unreasonably increased cost while allowing third parties the right to

beneficially use water conserved as a result of their investment in District facilities.

In determining and recommending the specific actions to be taken by the District, the General Manager shall have the authority to employ engineers and other consultants necessary to assist the General Manager in obtaining the necessary engineering and hydrologic data.

3. The Chief Legal Counsel shall take all appropriate action to reverse the State Water Resources Control Board finding that the District's failure to implement additional conservation measures constitutes misuse of water. In taking the necessary action, the Chief Counsel may, upon recommendation of the General Manager and approval of the Board, associate outside legal counsel, engineers and other consultants.

PASSED AND ADOPTED this 27th day of June, 1984.

IMPERIAL IRRIGATION DISTRICT

By _____
President

ATTEST:

_____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 48-84

WHEREAS, the Board of Directors of Imperial Irrigation District has adopted a water conservation program; and,

WHEREAS, certain entities have indicated a desire to finance water-saving improvements in the irrigation system in exchange for use of a portion of the water saved; and,

WHEREAS, the president of the Board has heretofore appointed a committee to engage in discussions with other entities regarding proposed water conservation measures within the District; and,

WHEREAS, it is appropriate to ratify and designate the members of the Water Exchange Committee.

NOW, THEREFORE, on motion by Director Benson, seconded by Director Edwards, BE IT HEREBY RESOLVED that the Board of Directors ratifies the appointment of and hereby designates the following-named persons to the Imperial Irrigation District Water Exchange Committee:

LLOYD ALLEN, Chairman

LEROY EDWARDS

CHARLES SHREVES

DONALD TWOGOOD

JOHN CARTER

JOHN BENSON, Alternate

PASSED AND ADOPTED this 25th day of September, 1984.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 25, 1911
EL CENTRO, CALIFORNIA

RESOLUTION NO. 51-84

WHEREAS, the Board of Directors of Imperial Irrigation District has heretofore adopted Rules and Regulations Governing the Distribution and Use of Water pursuant to Section 22257 of the Water Code of the State of California; and

WHEREAS, Regulation No. 39 of said regulations pertains to surface drain farm outlets; and

WHEREAS, a public hearing was held on September 20, 1984, for the purpose of receiving public comments on (1) Installing recorders on all delivery gates and tailwater structures, and (2) initiating a voluntary tailwater recovery program; and

WHEREAS, in order to install recorders and obtain reasonably accurate measurements, tailwater structures need to be properly constructed and maintained;

NOW THEREFORE, on motion of Director Edwards, seconded by Director Benson, BE IT HEREBY RESOLVED that Regulation No. 39 of the "Rules and Regulations Governing the Distribution and Use of Water and Construction, Operation and Maintenance of the Canal and Drainage System of Imperial Irrigation District" shall be amended and revised to read in its entirety in accordance with Exhibit A attached hereto and made a part hereof.

PASSED AND ADOPTED THIS 6th day of November, 1984.

IMPERIAL IRRIGATION DISTRICT

By _____
President

By _____
Secretary

IMPERIAL IRRIGATION DISTRICT

EXHIBIT "A"

REGULATION 39 - Agricultural Tailwater Structures

A. PURPOSE:

It is the intent of this regulation to provide an I.I.D. standard tailwater structure to serve primarily as a drainage structure while at the same time to facilitate the reasonably accurate measurement of the drainage discharge from each farmed unit.

B. LOCATION AND NUMBER ALLOWED:

1. Number Allowed

Each farmed unit is entitled to one tailwater structure provided the District maintains facilities to accept the discharged water and there is no conflict with other portions of this regulation.

2. Location of Tailwater Structures

Tailwater structures normally will be at intervals of not less than .25 mile, except where required by property lines of individual holdings.

C. STANDARD STRUCTURE:

1. Structure

All tailwater structures installed or replaced after December 1, 1984, must be certified by District to conform to size,length, depth, elevation of grade board, etc. as shown on IID Dwg. #12F-6855 "Standard Tailwater Structure Installation."

2. Approach Channel

An approach channel will be maintained perpendicular to face of tailwater structure, free of vegetation and debris. The maintained approach channel shall be a minimum of 10 feet in length from the face of the tailwater structure and the minimum bottom width shall be 24 inches.

D. ADDITIONAL FIELD STRUCTURES:

The water user may see it necessary to install additional field structures such as those to provide water elevation or trash control. Structures of this type may be installed no closer than five feet upstream of the certified standard structure.

E. LANDOWNER'S RESPONSIBILITY

1. Installing New Tailwater Structures

a. Construction of New I.I.D. Drains

The landowner will deposit with the District, prior to construction, the cost of material for a tailwater structure to be installed during construction of a new drain.

b. Existing I.I.D. Drains

If the landowner requests a new tailwater structure to discharge into an existing I.I.D. Drain, he will deposit with the District, in advance, the cost of material and installation.

2. Replacing Existing Tailwater Structures

a. Damaged Tailwater Structures

The landowner will be responsible for all costs in connection with replacing tailwater structures damaged, washed out or otherwise defective, caused in whole or in part by landowner's use and/or operations.

The landowner will be responsible for material cost when replacing existing tailwater structures only when it becomes necessary due to pipe deterioration or failure that is not caused by abuse of the water user.

b. Reconstruction and/or Deepening of Existing I.I.D. Drains

If the reconstruction and/or deepening of an existing I.I.D. drain necessitates the replacement of a tailwater structure which is not standard, the landowner will be required to deposit the cost of material required to replace the existing tailwater structure.

3. Maintenance

It is the responsibility of each water user to maintain a tailwater structure and approach channel in acceptable condition, in order to qualify for delivery of water. An acceptable structure shall have vertical walls and a permanent, level grade board set a maximum of 12 inches below the natural surface. If the situation warrants, and at the discretion of the District, 18 inches maximum may be allowed.

F. I.I.D. RESPONSIBILITY

1. Installing New Tailwater Structures

a. Construction of New I.I.D. Drains

The District will be responsible for installation costs of tailwater structures discharging into new drains.

b. Existing I.I.D. Drains

The District shall install tailwater structures discharging into existing I.I.D. drains, provided the landowner deposits an amount equal to material and installation costs.

2. Replacing Existing Tailwater Structures

a. Damaged Tailwater Structures

The District shall be responsible for installation cost when replacing existing tailwater structures only when it becomes necessary due to pipe deterioration or failure, that is not caused by abuse by the water user.

b. Reconstruction and/or Deepening of Existing I.I.D. Drains

In the case of reconstruction and/or deepening of existing I.I.D. drains, the District shall replace all existing standard tailwater structures.

3. Maintenance

The District shall assume responsibility for normal drain maintenance. However, cleaning of drains caused by washouts due to the landowner's operations will be at the landowner's expense.

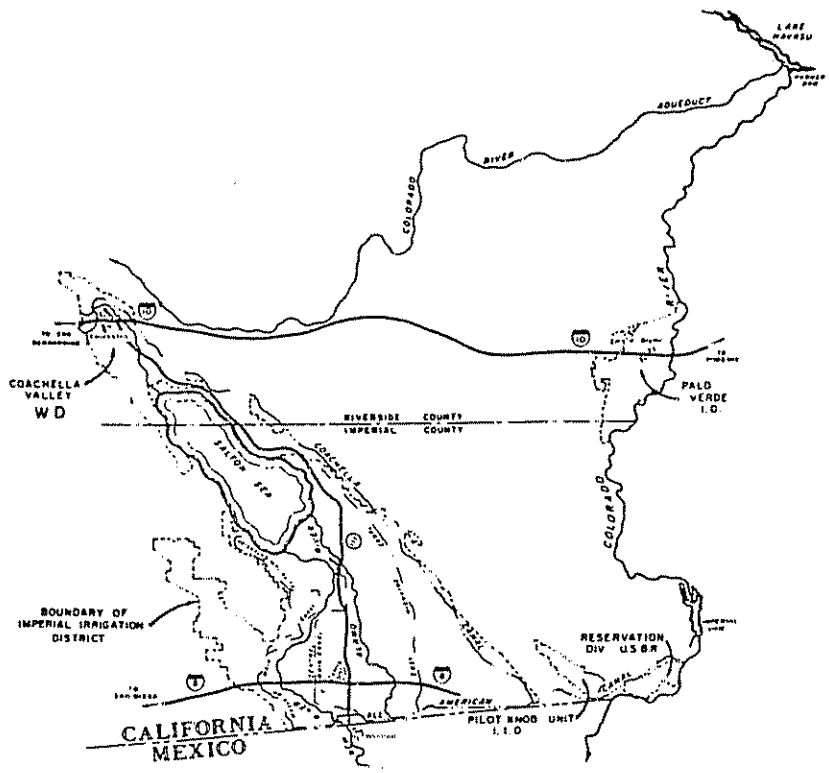
SUPPLEMENT NO. 2

IMPERIAL IRRIGATION DISTRICT

ALLEGED WASTE AND UNREASONABLE USE OF WATER

WATER RIGHTS DECISION

DECISION 1600



JUNE 1984

STATE WATER RESOURCES CONTROL BOARD

15.0 CONCLUSION

Approximately one million acre-feet per year of Colorado River water enter the Salton Sea as irrigation return flow from Imperial Irrigation District. This large quantity of freshwater is lost to further beneficial consumptive use and has contributed to the flooding of property adjoining the Salton Sea. Following diversion of major quantities of water by the Central Arizona Project which is scheduled to begin in late 1985 or 1986, there will be insufficient water available from the Colorado River to satisfy the existing level of demand of California water users. Although Imperial Irrigation District has taken some steps to conserve water, the evidence establishes that there are additional practical measures available to reduce the present losses of water within the District. Under the circumstances of this case, the Board concludes that the failure to implement additional water conservation measures at this time is unreasonable and constitutes a misuse of water under Article X, Section 2 of the California Constitution and Section 100 of the California Water Code.

The water conservation measures which the Board has determined should be implemented as soon as possible are specified in Paragraphs 1.1, 1.2, 1.3 and 1.5 of the order below. The required measures will assist in reducing the amount of excess tailwater and canal spills, but will not limit the amount of water necessary for effective irrigation and leaching of fields. The evidence supports the conclusion that the required measures are reasonable and, in most instances, are already called for, but not fully implemented, under

the District's announced policies. The record also establishes that additional water conservation would have several beneficial effects for the Imperial Irrigation District and the farmers within the District.

Other water conservation measures identified in the hearing record can be evaluated in the preparation of a comprehensive water conservation plan. Efficient water management and development of a water conservation plan will be facilitated by the availability of accurate information regarding quantities of water losses attributable to various aspects of irrigation and water delivery operations. Therefore, Imperial Irrigation District should develop reliable procedures for determining the disposition of all water which it imports through the All-American Canal.

ORDER

IT IS HEREBY ORDERED that Imperial Irrigation District shall do the following:

1.1 Submit evidence to the Board by February 1, 1985, demonstrating that the District has fully implemented its announced policy of monitoring the tailwater discharge of all fields receiving water deliveries.

1.2 Repair or require the water users within the District to repair defective tailwater structures and approach channels by February 1, 1985. The District shall also submit a plan by February 1, 1985, to ensure that the tailwater structures and approach channels are properly maintained on a continuing basis.

1.3 Develop and submit by February 1, 1985, a water accounting and monitoring procedure which will result in quantifying the following

with reasonable accuracy: (1) actual deliveries to farmers' headgates, (2) tailwater, (3) canal spills, (4) canal seepage, and (5) leachwater. The water accounting procedure shall be capable of normalizing the data in order to make the information comparable from year to year. The District shall specify a schedule for implementing the water accounting procedure.

1.4 Submit a detailed and comprehensive water conservation plan by February 1, 1985, which includes the following elements:

a. Tailwater Control: The plan shall specify maximum acceptable tailwater limits and shall state how such limits were determined. A means of reducing tailwater from all deliveries to the specified limits within one year of the plan's initial implementation shall be specified. The plan shall describe an accurate method to be used for measuring tailwater from fields receiving deliveries. The plan shall include an evaluation of the present tailwater monitoring program, particularly the requirement that assessment for excessive tailwater must be preceded by two measurements at least nine hours apart. The plan shall specify in detail the role which an expanded irrigation education program will play in assisting to reduce tailwater.

b. Canal Spills: The plan shall identify the quantity of water lost in operational spills needed for occassional dewatering of unlined canals. The plan shall specify methods by which unintentional canal spills can be eliminated and shall establish a schedule for implementing such methods.

c. Canal Seepage: The plan shall include a priority list of canals or portions of canals which need improvements to reduce canal seepage. The most feasible method of financing those improvements shall be identified and a schedule for making the improvements shall be established.

d. Leachwater: Minimum leaching requirements shall be discussed. An evaluation of current leaching practices within the IID shall be made to assess the potential for savings from reduced leachwater application. Leaching requirements shall be specified for each of the major crops grown in the IID.

The water conservation plan shall specify the estimated costs of implementing the selected measures, the method of financing each measure, the schedule for implementation, and the persons who will be responsible for implementation of each selected measure. The plan shall also describe the measures implemented to achieve the District's announced goal of reducing inflow to the Salton Sea by 100,000 acre-feet per annum by July 1, 1985. A report on the progress to date in meeting this goal shall be provided.

1.5 Submit a plan to the Board by February 1, 1985, for resumption of the regulatory reservoir construction program. This plan shall identify the number of reservoirs to be built, the time schedule for construction and the proposed method for financing the program. The development of this plan shall be guided by the letter dated September 29, 1982, from former IID Board of Directors' President Gerald Moore to Jack Coe of the Department of Water Resources pledging to construct one reservoir per year.

1.6 Submit a progress report to the Board by October 1, 1984, specifying the steps that have been taken to comply with provisions 1.1 through 1.5 above. The Chief of the Division of Water Rights shall inform the District of specific information to be submitted in the progress report.

IT IS FURTHER ORDERED that:

2.1 Following submission of the plans required in provisions 1.2 through 1.5, the Board will review said plans for their adequacy to meet the specified objectives and the schedule for implementing the proposed actions.

2.2 After the Board determines that a plan is adequate to meet the specified water conservation objectives, the District shall submit progress reports every six months until the objectives have been achieved.

2.3 If the Board determines that a plan is inadequate to meet the specified objectives, the District shall submit a revised plan in accordance with further direction from the Board.

IT IS FURTHER ORDERED that:

3.1 The Board reserves jurisdiction in this matter for the purposes of reviewing the adequacy of the required plans and District actions, to monitor the progress of the District in carrying out the various elements of the water conservation plan, and to take such other action

as may be appropriate. The Board will continue to reserve jurisdiction until it determines that the requirements of Article X, Section 2 of the California Constitution are being met.

Dated: JUN 21 1984

CAROLE A. ONORATO, Chairwoman

WARREN D. NOTEWARE, Vice-Chairman

KENNETH W. WILLIS, Member

SUPPLEMENT NO. 3

Copy of handwritten note addressed to Mr. (R. F.) Carter and Mr. (J. M.) Sheldon with notation: "What do you think of this." Ralph Gilbert (dated 9-19-74).

CHARGES:

1. When the surface runoff exceeds 10% of the amount being delivered to the field, the price of the water delivered should be doubled. Water running directly from a field ditch into a drain ditch should be considered as surface runoff for the purposes of these regulations.

EXCEPTIONS:

2. When a field is being irrigated on which no crop is growing or planted, the price of the water delivered should be doubled whenever the surface runoff exceeds 5% of the amount being delivered to the field.

EXCEPTIONS:

3. When a field is irrigated continuously for more than one day, the price of the water delivered should not be increased unless the total surface runoff exceeds the allowable percentage of the total water delivered for the entire irrigation. When this situation does exist, the price of the water delivered should be increased only for each day during which runoff exceeds the allowable percentage.

MEASUREMENTS:

4. Farmers should receive all necessary information they need to correctly measure and calculate their own surface runoff.

MEASUREMENTS:

5. Three measurements per day of water delivery should be used to determine the amount of surface runoff. No two of these measurements should be within a seven hour period. When an insufficient number of measurements is made, any additional measurements should be considered to be zero for the purpose of calculating total surface runoff.

   Runoff may be measured after the delivery of water to the field has stopped for determining the percentage of runoff for the last day water was delivered to the field.

CHARGES:

1. When the surface runoff exceeds 10% of the amount being delivered to the field, the price of the water delivered should be doubled. Water running directly from a field ditch into a drain ditch should be considered as surface runoff for the purposes of these regulations.

EXCEPTIONS:

2. When a field is being irrigated on which no crop is growing or planted, the price of the water delivered should be doubled whenever the surface runoff exceeds 5% of the amount being delivered to the field.

EXCEPTIONS:

3. When a field is irrigated continuously for more than one day, the price of the water delivered should not be increased unless the total surface runoff exceeds the allowable percentage of the total water delivered for the entire irrigation. When this situation does exist, the price of the water delivered should be increased only for each day during which runoff exceeds the allowable percentage.

MEASUREMENTS:

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MEASUREMENTS:

5. Three measurements per day of water delivery should be used to determine the amount of surface runoff. No two of these measurements should be within a seven hour period. When an insufficient number of measurements is made, any additional measurements should be considered to be zero for the purpose of calculating total surface runoff.

   Runoff may be measured after the delivery of water to the field has stopped for determining the percentage of runoff for the last day water was delivered to the field.

MEASUREMENTS:

6. The following information should be recorded for each measurement of surface runoff:

   A. Location
   B. Date and time
   C. Effective size of outlet structure
   D. Average depth of overpour (or other applicable measurement)
   E. Special circumstances eg. - obstructions, uneven depth, unlevel wier, etc.

NOTICES:

7. A notice should be sent to each water user immediately upon determination of excessive runoff resulting in an increase in the price of water delivered to him. Such notice should include an itemized statement of the charge, and reasons for making the charge, including the measurements upon which the determination was based.

ADJUSTING WATER DELIVERIES:

8. If requested to do so, the I.I.D. should make every reasonable effort to adjust the size of deliveries when ever it would be expected to result in less water going into the Sea.

REDUCING OR WITHHOLDING ORDERS:

9. The I.I.D. should also continue its present program of reducing or withholding orders only in cases where an extremely high percentage of the order can be prevented from going into the Sea. Whenever an order is reduced the I.I.D. should make every reasonable effort to contact the water user and irrigator immediately.

IMPLEMENTATION:

10. It is recommended that the aforedescribed water conservation program be implemented on _____, following its full and complete explanation to all farmers. Said plan should remain in effect until _____ _____. At that time a full evaluation of the program and its effectiveness, and a determination of the need and desireability of continuing it should be made.

11. The I.I.D. should notify all farmers of the adoption of the new water conservation program, explaining fully all its aspects (including how to measure surface runoff). Farmers should be informed that the program will go into effect on _____, unless the inflow to Salton Sea drops below __% of the total water diversions to Imperial Valley for the month of _____.

SUPPLEMENT NO. 4

To: Board of Directors, Imperial Irrigation District
Imperial County, California

From: Citizens' Salton Sea Committee

Gentlemen:

We herewith submit our joint assessment of the current condition regarding the Salton Sea drainage basin and our best estimate of those steps most practical in terms of cost, effectiveness, time, land management, and environmental safety, toward modifying those conditions.

THE SEA: The Salton Sea is the most economically feasible drainage basin for those lands lying in the delta of the Colorado River and currently developed for agricultural purposes. The Sea is now being used, and should continue to be used, for certain recreational, ecological, and wildlife sanctuary purposes.

IMMEDIATE CONCERN: The most immediate and pressing concern of the committee is the continuing rise in the level of the waters contained in the Salton Sea. This rise is seriously threatening the agricultural lands and other uses of the Sea, especially those recreational installations at the water's edge.

LONG RANGE CONCERN: In addition to the immediate threat of inundation, the committee addressed itself to the "best practical use" of the waters of the Colorado River as they relate to the level of the Sea, and to the future of the area regarding availability of water for all of the currently existing and possible future uses.

In addressing these concerns we make the following recommendations and submit them along with the supporting data. The data includes our estimate of the effectiveness which each individual program would contribute towards meeting the semi-annual goal. A proper mix of the solutions which would result in 100 percent effectiveness in meeting the goal should be instituted.

SHORT RANGE RECOMMENDATIONS: (July 1976 - June 1979)

1. An emergency (immediate) program of water-use be initiated to reduce and control the flow of drainage waters to the Sea. This reduction of inflow should maintain the Salton Sea high water elevation between the -231 and -230 foot elevation in accordance with the attached elevation management level chart. The Citizens' Salton Sea Committee should remain active (meeting monthly) to monitor and evaluate progress as of November 1 and June 1 annually, and report their findings, with further recommendations, to the Board.

a. Water spreading practices on District owned or controlled lands, Fish and Wildlife lands and private lands on a volunteer basis should be implemented immediately. Drainage water should be made available for this purpose at no cost to the user. Water which has been purchased and wasted beyond its intended delivery point is intermittently available at the tail end of the lateral system. This waste water should be intercepted where possible before it flows unused into the Sea, and should also be made available to the wildlife refuges at reduced cost for ponding and evaporation purposes. This incentive would place approximately 1,570 acres of wildlife lands into ponded areas immediately, with a total potential of 5,420 acres of wildlife lands ponded.

b. Reduce water delivery to the Imperial Valley at Drop #1 by 5% compared to the same period during 1975. This will have a positive effect in reducing the outflow into the Sea, and have a minimal adverse impact on farming water needs.

c. Investigate the feasibility of constructing an intercept lateral along the east side of the Alamo River from Holtville north. This recaptured water could then be ponded and reused in the Vail system.

d. Establish immediately a program to educate water users in conservation practices, and step up efforts to patrol waste water offenders.

e. Accelerate the current program of management ponds within the system to improve the efficiency of delivery by shortening the reaches between the release point and the point of beneficial use.

2. Establish an incentive conservation water-use-program effective July 1, 1976 as follows:

a. Increase the basic water rate for 5 acre feet per acre per year or less to $4.50 or $5.00 per acre foot (based on needs for implementing IID efficiency improvements) for lands which utilize drainage pipes larger than 8 inches in diameter or outflow greater than 1.2 CFS with a 6 inch head. A sliding scale beyond 5 acre feet per acre per year should then be instituted.

6	- 8 af/ac/yr	=	$ 6.00
8	-12 "	=	7.00
12	-16 "	=	8.00
16	-20 "	=	9.00
20	-24 "	=	10.00

b. All funds collected in excess of $3.50 per acre foot should be earmarked for use in improving the efficiency of the irrigation system from the standpoint of both reducing waste water and improving delivery techniques.

3. Allow any water user to make application to the IID for an improvement in his individual irrigation system prior to August 1 annually as follows:

a. (Package A) Install an 8" diameter (1.2 cubic feet per second, 6 inch head field grade) field drain pipe reducer on all drainage outlets in the field at the total expense of the land owner. Have the IID install the structure. The land owner may install it himself if it meets the IID blueprint and is certified by an IID inspector. When this device is installed, the water charge for water delivery to this field should be reduced by 50 cents and the sliding scale charge would be eliminated.

b. (Package B) When a field is certified by an IID inspector as having eliminated all surface waste water from flowing into the drainage system, all controls should be lifted and the water charge should be lowered to $3.50 per acre foot. Those fields using sprinkler systems on a year round basis must have a holding pond with a minimum capacity of 5 acre feet installed before the field qualifies for the zero waste rate. Emergency outflow into the drainage system should be regulated by the IID for such emergencies as equipment failure and rain storms which would otherwise cause lower end field flooding.

LONG RANGE RECOMMENDATIONS: (beyond July 1979)

1. These recommendations are only in the formative stages; however, several possibilities are being considered.

2. The following recommendations are steps which could be taken immediately:

a. Establish communications between IID and the State of California Water Resources Control Board regarding their program under the Division of Planning and Research. Contact Lt. Governor Mervyn Dynally regarding the activities of the Border States Commission with a view towards seeking their assistance in planning and implementing conservation plans.

b. Take immediate steps to establish a long-range planning board including groups and political subdivisions in Riverside County, Imperial County, and the State of Baja, Mexico, towards a goal co-ordinating all planning concerning the drainage basin of the Salton Sea and the delta of the Colorado River.

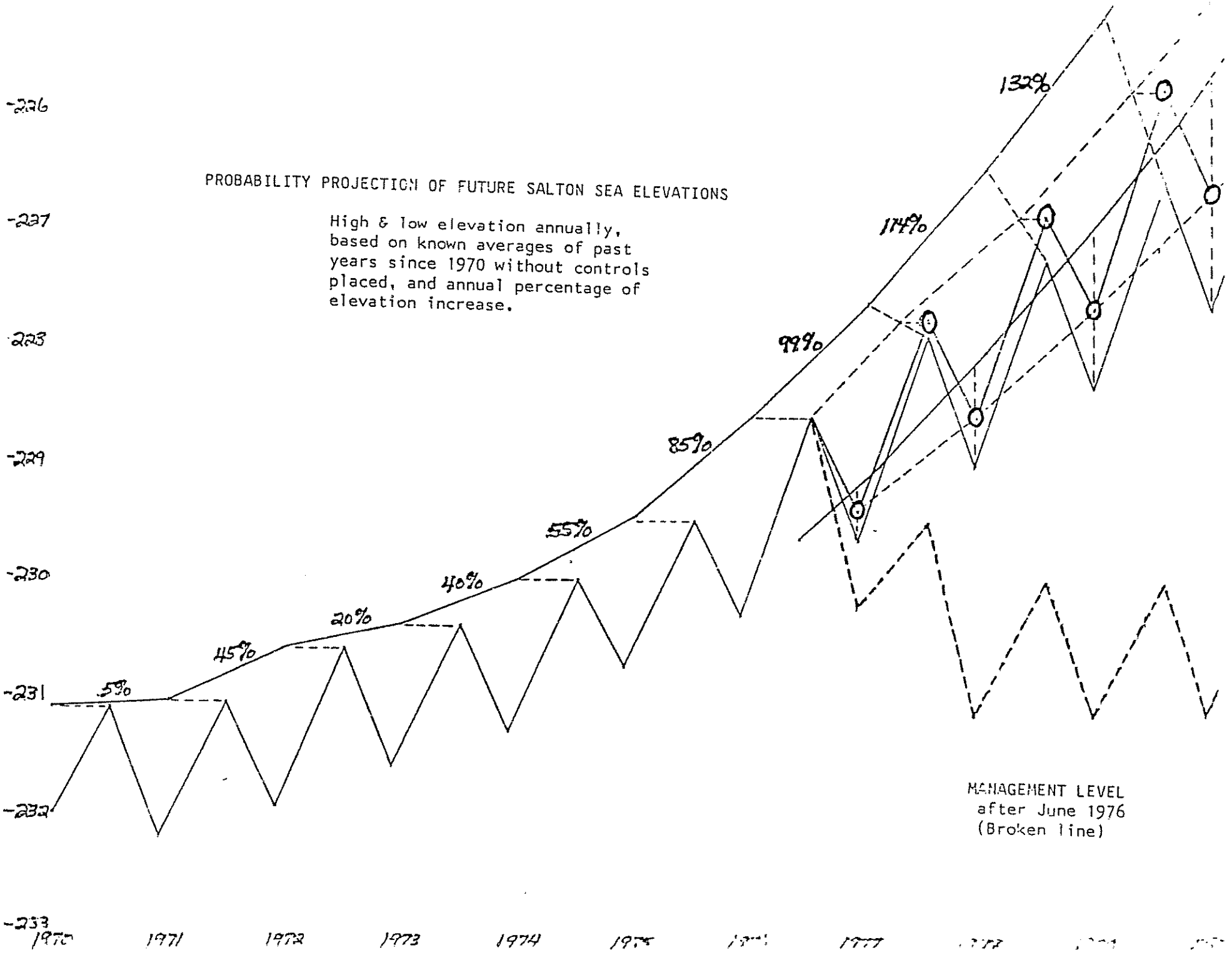
c. Engage a technical investigative organization (or individual) who has the capability of providing a computer-based model of the environment in which the problem exists. This organization should have sufficient independent input to avoid the errors of habit and familiarity that can tend to prejudice the results.

It should be understood that these recommendations at this time, may not be enough to resolve the problems. However, an evaluation by November 1, 1976 should provide the information necessary and may very well result in additional recommendations for constraints to be placed on excess water wasters.

Respectfully submitted,

Stephen R. Vehrs

Stephen R. Vehrs
Short-range Planning Subcommittee


PROBABILITY PROJECTION OF FUTURE SALTON SEA ELEVATIONS
High & low elevation annually, based on known averages of past years since 1970 without controls placed, and annual percentage of elevation increase.
-226
-227
-228
-229
-230
-231
-232
-233
1970
1971
1972
1973
1974
1975
1976
1977
5%
45%
20%
40%
55%
85%
99%
114%
132%
MANAGEMENT LEVEL
after June 1976
(Broken line)

OBJECTIVE LEVEL ELEVATIONS

	Management Level	Uncontrolled Level	Difference	Acre Feet
Nov 1976	-230.25	-229.40	.85	202,300
Jun 1977	-229.50	-227.79	1.71	413,820
[illegible] 1977	-231.15	-228.57	2.58	624,360
Jun 1978	-230.00	-226.85	3.15	771,750
Nov 1978	-231.15	-227.66	3.49	844,580
Jun 1979	-230.00	-225.85	4.15	1,029,200
Nov 1979	-231.15	-226.63	4.52	1,107,400

PAST ELEVATIONS WITH PROJECTIONS

	Average of .67 Increase High Elevation			Average of .67 Increase Low Elevation		
	June	16% Increase	Average	November	16% Increase	Average
1970	-231.10			-232.20		
1971	-231.05			-231.95		
1972	-230.60			-231.60		
1973	-230.40			-231.30		
1974	-230.00			-230.75		
1975	-229.45			-230.35		
1976	-228.60			-229.68		-229.40
1977	-227.93	-227.61	-227.79	-229.01	-229.10	-228.57
1978	-227.26	-226.47	-226.85	-228.34	-228.00	-227.66
1979	-226.59	-225.15	-225.85	-227.67	-226.84	-226.63
1980	-225.92	-223.62		-227.00	-225.50	

SUPPLEMENT NO. 5

UNITED STATES DEPARTMENT OF AGRICULTURE

AGREEMENT FACE SHEET

AGENCY (Name & address)

AGRICULTURAL RESEARCH SERVICE
WESTERN REGION
1333 Broadway, Suite 400
Oakland, CA 94612

AGREEMENT NO.: N/A

PROPOSAL NO.: N/A

PERIOD OF AGREEMENT: From: November 1, 1981 Thru: February 1, 1986

AMOUNT

☐ Increase	Previous Total	$ N/A
☐ Decrease	+ or −	$ N/A
☒ New	New Total	$ N/A

PERFORMING ORGANIZATION (Cooperator, Grantee, Contractor) (Name & address)

IMPERIAL IRRIGATION DISTRICT
333 E. Main Imperial
Imperial, CA 92251

TYPE OF ACTION (e.g., new, change, amendment, etc.): New

ADVANCE PAYMENT: $ N/A

OBLIGATION DISTRIBUTION

Accounting Code No.	Amount
N/A	$ N/A

TITLE OF PROJECT

Use of saline drainage water for irrigation: a field demonstration in the Imperial Valley

INFORMATION SYSTEM NO.: CRIS W/U No. 5210-20730-002

PRINCIPAL INVESTIGATOR, PROJECT DIRECTOR, OR REPRESENTATIVE (Name & address)

Mr. D. A. Twogood, Represenative
(same address as above)

TYPE OF AGREEMENT: MEMORANDUM OF UNDERSTANDING - INDIVIDUAL

AUTHORITY: 7 USC 427, 427(i), 450a, 1624 and 2201

PROVISIONS

This Agreement includes the following attachments:

- ☐ Statement of Work; or
- ☐ Project Summary; and
- ☐ General Provisions
- ☐ Special Provisions
- ☐ Budget
- ☐ Proposal
- ☒ Other (specify): EXHIBIT "A" "Patent Provisions"

FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE

Signature indicates a grant award when a grant authority is cited above.

TYPED NAME	SIGNATURE	DATE
Authorized Departmental Officer		

THE AUTHORIZED DEPARTMENTAL OFFICER'S DESIGNATED REPRESENTATIVE (ADODR) (Name)

Dr. James D. Rhoades

ADDRESS

USDA-ARS-Western Region
U. S. Salinity Laboratory
4500 Glenwood Drive
Riverside, CA 92501 (714-683-0170)

FOR THE PERFORMING ORGANIZATION

(Signature of person authorized by the governing body of the performing organization to incur contractual obligations.)

Signature indicates acceptance of grant when a grant authority is cited above.

TYPED NAME AND TITLE	SIGNATURE	DATE
Gerald L. Moore, President	Gerald L. Moore	2-16-82
Larry E. Beck, Secretary	Larry E. Beck	2-16-82

THIS MEMORANDUM OF UNDERSTANDING is entered into between the United States Department of Agriculture, Agricultural Research Service, hereinafter referred to as ARS, and the Imperial Irrigation District, hereinafter referred to as the Cooperator, to support the research investigations on water conservation;

WHEREAS, it is the intention of the parties to this memorandum of understanding that such research investigations shall be for their mutual benefit and for the benefit of the people of the United States;

NOW, THEREFORE, for and in consideration of the promises and mutual covenants herein contained, the parties hereto do mutually agree with each other as follows:

A. The Cooperator Agrees:

1. To purchase, install and maintain equipment and provide the energy required to deliver Alamo River water on demand to a point adjacent to Ohmar lateral outlet number 30a in tract 126 at a rate of at least 6 cubic feet per second (CFS) from the Alamo River upstream of the point where the drainage canal that parallels Ohmar lateral discharges into the Alamo River.

2. To provide equipment, materials and services in addition to that described in paragraph 1 above, as requested by ARS and mutually agreed to, in order to facilitate the operations of the research.

3. To permit ARS to install flow measuring devices in the water delivery system and collect water samples as may be required in the research program.

4. To permit use of Alamo River water upon demand, to the experimental field, as requested by ARS, from February 1, 1982 until February 1, 1986.

5. To complete the installations necessary to deliver Alamo River water to the project field by February 1, 1982.

B. The Agricultural Research Service Agrees:

1. To operate the Alamo River water delivery system as required to meet the irrigation needs of the experiment in an orderly and careful manner to avoid damage or excessive wear on the equipment.

2. To irrigate the experimental sites using the Alamo River water to grow crops in two rotations: (1) wheat, sugarbeets, lettuce, wheat, sugarbeets, lettuce; and (2) cotton, cotton, wheat, and alfalfa.

3. To furnish the Cooperator annual progress reports and copies of research data as requested.

4. To the extent permitted by law, ARS will assume liability for damage to the property of the Cooperator at the research site caused by any negligent or wrongful act on the part of any ARS employee or agent.

5. To reimburse the Cooperator for any expenditures made by the Cooperator for materials or services requested by ARS and agreed to by the Cooperator that are in excess of $60,000 which the Cooperator plans to expend for the

materials and services set forth in paragraph A.1 and 2 herein for support of the research project. Such expenses exceeding $60,000 will be reimbursed under the Broad Form Cooperative Agreement No. 58-9AHZ-2-637 between ARS and the Cooperator.

C. It is Mutually Understood and Agreed:

1. Either party shall be free to furnish such equipment as may be needed or otherwise unavailable. Equipment furnished from Federal funds shall remain the property of the Federal Government, subhect to removal or other disposition at any time. Equipment purchased by the Cooperator shall remain the property of the Cooperator, subject to removal or other disposition at any time.

2. Results of the research herein outlined may be published jointly by the Cooperator and ARS, or by either of these institutions separately, but manuscripts prepared for publication by either shall be submitted to the other party for suggestions and approval prior to publication. In the event of any disagreement, either party may publish results on its own responsibility, giving proper acknowledgment of cooperation.

3. This Memorandum of Understanding is to define in general terms the basis on which the parties concerned will cooperate, and does not constitute a financial obligation to serve as a basis for expenditures. Each party will handle and expend its own funds. Any and all expenditures from Federal funds made in conformity with the plans outlined in this Memorandum of Understanding must be in accordance with the Department rules and regulations and in each instance based upon appropriate financial documents. The responsibilities assumed by the cooperating parties are contingent upon funds being made available from which expenditures may legally be made.

4. Funds of a cooperating party shall not be expended by a Federal employee. When the cooperating party has no representatives stationed in the locality, a Federal employee may handle the accounts, but shall forward the vouchers to the authorized agent of the cooperating party for payment. Cooperating parties should not send checks payable to Federal employees or send checks payable to "Cash" or "Bearer" for payments of local expenses.

5. Patent provisions applicable to this memorandum shall be in accordance with EXHIBIT "A", attached hereto and made a part hereof.

6. No member of, or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this memorandum or to any benefit that may arise therefrom, unless it be made with a corporation for its general benefit.

7. This Memorandum of Understanding became effective November 1, 1981, and shall continue until February 1, 1986, but may be modified or discontinued at the request of either party. Requests for termination or any major change shall be submitted to the other party for consideration not less than 60 days in advance of the effective date desired.

SUPPLEMENT NO. 6

Water Today and Tomorrow

Proceedings of the Specialty Conference
Sponsored by the Irrigation and Drainage Division
of the American Society of Civil Engineers

Little America Hotel
Flagstaff, Arizona
July 24-26, 1984

Hosted by the
Arizona Section, ASCE
In cooperation with the
American Society of Agricultural Engineers
American Water Resources Association
U.S. Committee on Irrigation, Drainage and Flood Control
Soil Conservation Society of America
National Association of Conservation Districts

John A. Replogle and Kenneth G. Renard, Editors

Published by the
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345 East 47th Street
New York, New York 10017-2398

IRRIGATION EFFICIENCY IN THE IMPERIAL VALLEY

J. D. Oster, J. L. Meyer, L. Hermsmeier, and M. Kaddah*

ABSTRACT:

This paper reports the results of a five year study (1977-81) of on-farm irrigation efficiencies conducted by USDA-ARS and the Imperial Valley Irrigation District (IID). Applied water and runoff was measured on nine fields; tile drainage was measured on eight fields. The number of measurements by category were: applied water, 595; runoff, 488; and drainage, 322. Cultural practices were determined by the owner.

The average irrigation efficiency for all fields was 69%. Average runoff and drainage was 18 and 13%. The effects of irrigation method, crop, and soil texture were evaluated and will be discussed. Based on individual crop areas and water requirements, the estimated crop water requirement for IID to meet potential evapotranspiration is 2.34 km^3/y. The water requirement for leaching, without recycling drainage water, is 0.33 km^3/y. Based on this assessment runoff applied water is the primary source of recoverable water from on-farm irrigation practices. If runoff could be reduced to 5%, the estimated water savings range from 0.3 to 0.5 km^3/y. When combined with canal lining and reduced canal spills, the potential water savings range from 0.5 to 0.8 km^3/y. These potential water savings approximately equal the expected reduction in available Colorado River water by California as a consequence of full implementation of the Central Arizona Project.

Introduction

Colorado River water diversion by the Imperial Irrigation District (IID) during 1975-79 averaged 3.45 km^3/y for irrigation of 186 000 ha in the Imperial Valley (2). On-farm delivery averaged 3.13 km^3/y and inflow to the Salton Sea averaged 1.06 km^3/y. These flows include tail and drainage water water, canal spills and seepage. Except for storm runoff, they are sources of recoverable water for use in the Imperial valley or by other California water users of Colorado River water.

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The Agricultural Research Service (ARS) and IID conducted a long-term (1977-81) field study to evaluate on-farm irrigation efficiency. This study resulted in many measurements of applied water (N = 595), runoff (N = 488), and drainage (N = 322). These data are timely. The Central Arizona Project, scheduled to begin in 1985, will eventually reduce the Colorado River water available to California by 0.5 km^3/y. Legal action (2) stemming from high water levels in the Salton Sea is partially based on the claim that tail water from on-farm operations is excessive.

Experimental Methods

Field Selection Criteria. The selected fields were distributed throughout the valley and representative crops were grown. Eight had a separate tile drainage system with an outlet which could be instrumented to measure the drainage volume. All fields had a suitable irrigation inlet for installation of an impeller actuated flow meter and a suitable site to measure tail water. The cooperator determined all the cultural practices.

Water Measurement. Tail water was measured with Parshall flumes equipped with stage recorders. Drain water was measured with a similarly equipped slotted tube. Drainage measured between irrigations was allocated to the previous irrigation. Applied water was measured by primarily one of two methods, flow meter (M) and water height (H) over a standardized broad crested weir, a common method used by IID throughout the district. The relationship between the two methods for 39 paired measurements was $H = -0.002 + 1.02M$ ($r^2 = 0.77$). Consequently both sets of applied water data were merged into a single set.

Pan Evaporation. Daily measurements were made with a U. S. Weather Bureau Class A pan located at the Irrigation Desert Research Station (USDA-ARS) about 2 mi. SW of Brawley, CA. Because of its location relative to buildings, roads, and prevailing wind direction, the pan evaporation data may be somewhat higher than would be obtained from a pan installed in a large grassed field.

Results

Three subsets of data were identified: drainage, runoff and applied water. The drainage subset (eight fields) was complete: drainage, runoff and applied water were measured for each irrigation (N = 322). These were grouped by field (Table 1) and by crop (Table 2). The runoff (N = 489) and applied sets (N = 595) include data obtained from for nine fields. We intend to publish the entire data set elsewhere (5).

Table 1. Average runoff, drainage and irrigation efficiences, by field with corresponding standard deviation, and overall averages for all fields weighted for the number of observations for each field.

Field	N	runoff		drainage		irrigation efficiency	
		x	s	x	s	x	s
		----------%----------					
1	54	28	11	3	5	70	12
2	24	16	11	12	13	73	21
3	41	23	13	7	6	70	15
4	2	7	6	22	10	71	5
5	-	-	-	-	-	-	-
6	39	19	8	10	7	71	12
7	39	20	8	2	2	78	9
8	78	14	13	13	13	73	22
9	45	14	7	41	27	45	28
Overall Average		19		13		69	

Table 2. Average runoff, drainage and irrigation efficiency by crop and corresponding standard deviation.

Crop	N	runoff		drainage		irrigation efficiency	
		x	s	x	s	x	s
		----------%----------					
Barley	5	19	9	2	2	79	9
Wheat	45	17	9	7	9	75	15
Cotton	44	24	12	4	6	72	13
Sorghum	2	7	4	22	10	71	5
Alfalfa	141	15	7	15	17	70	20
Sugar beets	51	20	9	13	16	67	24
Bermuda grass	16	30	11	5	5	64	16
Sudan grass	6	12	8	42	21	46	24
Lettuce	5	26	10	29	7	44	11
Cantaloupe	7	38	14	42	13	20	24

Fields. The irrigation efficiencies (Table 1) for fields 1-8 ranged from 70-78%. The efficiency for field 9, 45%, was unusually low as discussed below. The corresponding standard deviations range from 5-28%. These standard deviations may not accurately describe the distribution of individual measurements about the mean because preliminary analyses suggest the data may not be normally distributed. Averages based on total runoff and drainage for individual fields were 0 to 3% lower than those in Table 1. The differences for the overall averages were similar. It follows that neither the runoff or drainage averages in Table 1 are the consequence of a few extraordinary irrigations, either large or small.

The influence of surface soil texture on drainage was not clear cut. Several factors were likely responsible: small, textural variation between the fields, different cropping history, and irrigation management. The drainage percentages for field two (23% loam, 26% fine sand), were nearly equal to the overall average, 13%, for all fields. The data for field four were too limited (N = 2) to be of consequence. Silty clay was the predominant soil texture of the other fields. Drainage was less than average for fields 1, 3, and 7; fields 6 and 8 were average, while the drainage (41%) for field 9 was exceptionally high. The predominant crops grown in field 9 were alfalfa and sugar beets for which drainage is usually much lower (Table 2). The high drainage may have resulted from over irrigation: the ratio of applied water to pan evaporation was the highest of all fields. Lateral movement of drainage water from surrounding fields may also be a factor.

Crops. Irrigation efficiency, drainage and runoff by crop (Table 2) is listed in order of decreasing efficiency. Efficiency exceeded 70% for barley, wheat, cotton, sorghum, and alfalfa. Based on its high water requirement, alfalfa was expected to top the list. However the corresponding drainage (15%) and runoff (15%) were average. The higher efficiencies for barley, wheat, and cotton were partially the result of lower drainage. The low efficiencies for Sudan grass, lettuce and cantaloupe resulted primarily from the corresponding high drainage percentages of 42, 29, and 42%. Runoff also contributed to the low efficiencies for lettuce and cantaloupe as did surface soil texture for lettuce. The lettuce data were obtained on Field 2. About one quarter of this field was mapped as Meloland and Holtville loams, and another quarter as Vint loamy very fine sand.

Runoff for furrow irrigated crops was higher than for border irrigated crops. The weighted average runoff for cantaloupe, lettuce, sugar beets, and cotton is 23% as compared to 16% for barley, wheat, sorghum, alfalfa, Bermuda, and Sudan grass. Bermuda grass (border irrigated) was the exception with a runoff of 30%.

Discussion

Water Budget. This section addresses two questions: 1) what are the applied, evapotranspired, runoff and drainage components of the IID water budget? 2) how do these compare to projected water needs for potential evapotranspiration, ETp, and leaching? The data were summarized by field and by crop to obtain two sets of estimates. For each set we assumed the same runoff (18%) and drainage (13%). These averages were calculated from the average weighted depths of applied, runoff and drainage water (Table 3).

Table 3. Calculated water budget components by crop for 1977-79 based on ETp, and drainage and runoff data given in Table 2 and crop area for 1977-79 as reported by Calif. Dept. of Water Resources (2). Drainage depths and percentages to satisfy leaching requirements are also included.

	Irrigated Area 1977-79	Budget Component				Required Drainage Water	
		ETp	Applied	Drained	Runoff	Drainage Water	
	ha	m					%
Alfalfa	58 800	2.01*	2.87	0.43	0.43	0.44	18
Barley	2 500	0.55*	0.70	0.01	0.13	0.01	2
Cotton	38 100	1.03*	1.43	0.06	0.34	0.01	1
Lettuce	16 800	0.43**	0.98	0.28	0.25	0.18	30
Sorghum	4 100	0.53*	0.75	0.16	0.12	0.01	2
Sugar beets	19 400	1.16*	1.73	0.22	0.35	0.01	1
Wheat	40 900	0.64*	0.85	0.06	0.14	0.01	2
Ave. wtd. for land area	180 000	1.20	1.73	0.22	0.31	0.17	12

* see reference 5
** see reference 4

The average annual applied water to all fields and Class A pan evaporation are compared in Table 4. The ratio of applied water to that evaporated ranged from 0.28 (1981) to 0.68 (1979). The average ratio for 1977-81 was 0.51 and for 1977-80 was 0.56. Assuming an average pan evaporation of 2.86 m/y, these ratios were used to obtain the low (2.71 km^3/y) and high (2.98/km^3/y) estimates of applied water for the Imperial Valley (186 000 ha) given in columns 2 and 3 of Table 5. The corresponding volumes of runoff water range from 0.49 to 0.54 km^3/y and those of drainage water range from 0.35 to 0.39 km^3/y. Crop ET estimates range from 1.86 to 2.05 km^3/y.

Table 4. Average water applied to all fields by year as compared to pan evaporation.

Year	Applied Water	Pan Evaporation	Applied/Pan
	cm		
1977	155	276	0.56
1978	147	303	0.49
1979	191	279	0.68
1980	152	281	0.54
1981	82	292	0.28
Overall Average	145	286	0.51

Table 5. Comparison of various estimates of Imperial Valley budget components obtained in this study to that reported by California Department of Water Resources (2).

	Fields (Table 4) Low 1977-81	Fields (Table 4) High 1977-80	Crops (Tables 2 & 3) Full ET	Crops (Tables 2 & 3) Partial ET	DWR*
	----------km^3/y----------				
ET @ 69%	1.86	2.05	2.34	2.10	2.05
Runoff @ 18%	0.49	0.54	0.61	0.55	1.02
Drainage @ 13%	0.35	0.39	0.44	0.39	
Applied water	2.71	2.98	3.39	3.04	3.07*

*Corrected for canal spills.

The water budget estimates using crop data assumed ETp requirements were met together with the average drainage and runoff by crop reported in Table 2. The same crops and crop areas reported by Department of Water Resources for 1977-79 (2) were used: crop data for Sudan and Burmuda grass, and cantaloupe from this were not used. The ETp values (col 3, Table 3) were either measured at the Irrigation Desert Research Station at Brawley with a weighing lysimeter (4) or in southwestern Arizona by measuring changes in soil water content (3). We further assumed the same crop areas given by the California Department of Water Resources (2). The total area, 180 600 ha (Table 3), represents 92% of the total cropped area (196 000 ha) reported for 1977-79 (2). (Cropped area exceeds that irrigated because of double cropping.) The weighted average depth of applied water (1.73 m/y) corresponds to an applied water volume of 3.39 km^3/y (column 4, Table 5) for 196 000 ha. This may be high. Examination of applied water by crop and corresponding pan evaporation indicates an underirrigation of 0.24 km^3/y. If underirrigation continues, the applied water requirement would be 3.15 km^3/y (col 5, Table 5).

Similar water budget estimates were obtained using hydrologic methods for 1977-79 (2). Measured in flow at drop 1 of the All-American Canal, corrected for canal seepage, was 3.07 km^3/y. Outflow was estimated to be 1.02 km^3/y, based on gauged flows of the Alamo and New Rivers corrected for flows originating from Mexico, storm runoff, canal seepage and canal spills. The difference between inflow and outflow (2.05 km^3/y), compares closely with the average of the four estimates of evapotranspiration (2.09 km^3/y) we obtained.

Water Requirements IID. We considered two alternatives to estimate water requirements: enough water to meet both ETp and leaching requirements, with and without recycling drainage water. Neither alternative included a runoff component. The drainage requirement without recycling was based on the weighted average drainage depth of 0.17 m (col 7, Table 3) or 0.33/km^3/y. This drainage, or leaching requirement, was estimated using the method proposed by Rhoades (7) for infrequent irrigation.

Assuming an ETp of 2.34 km^3/y, the total water requirement, including drainage, is 2.67 km^3/y. Blending drainage water with Colorado River water is feasible (8) and would reduce the water requirement. For steady state conditions, the EC of the drainage water (6) would be about 9 dS/m (5760 ppm). A blend of about 2 parts drainage water to 1 part Colorado River water would result in about 0.50 km^3/y of irrigation water with a salinity of about 6 dS/m. This is less than the threshold salinity for cotton, sugar beets, barley, and wheat; the corresponding leaching requirement would be about 30%. The final drainage volume and its salinity would be about 0.15 km^3/y and 18 dS/m. Although the practicality of achieving such a recycling strategy is questionable, it results in the lowest estimate of the required water (2.49 km^3/y) which, in principle, would be achievable.

Recoverable Water. Water requirements based only on ET and leaching requirement range from 2.49 to 2.67 km^3/y. Assuming an on-farm delivery of 3.07 km^3/y, the corresponding recoverable water ranges from 0.39 to 0.65 km^3/y. The corresponding numbers for a runoff component of 5% would be 0.26 to 0.53 km^3/y. Runoff could be reduced to zero, in principle, if each field had a pumpback system. Cost estimates of pumpback systems (2) range from $6 to $20 per 1000 m^3. Since water costs are currently about $6.00 per 1000 m^3, current economic incentives to install pumpback systems are small.

Runoff of 5% may be achievable, without pumpback systems, with increased water delivery flexibility, improved irrigation scheduling (timing and amount of water), and improved on-site water management. Water orders from Imperial Dam precede delivery by 6 to 11 days. Farmers order 1 to 3 days ahead of their needs. In addition to this source of inflexibility, farm water delivery is conducted in 24 hour increments. Provisions exist for flow reductions during the last 12 h provided the district has requests for more water by other users and can make the delivery. Changing the district's scheduling and water delivery methods may require doubling the Zanjero staff at a cost of $2 million (2). If this could result in reducing runoff by about 0.4 km^3/y, the unit cost per 1000 m^3 would be $5.00 ($6.16/ac ft). Since this is less than the current cost for water, further study of current delivery operations appears warranted.

Other recoverable losses (2) include canal spills (0.06 km^3/y), seepage recovery (0.04 km^3/y), and canal lining (0.14 km^3/y). With 5% runoff, the total potential recoverable water from IID operations within the Imperial Valley would range from 0.50 to about 0.77 km^3/y assuming continued diversion of 3.45 km^3/y from the Colorado River.

Implications and Conclusion

Potential Users of Saved Water. An irrigatable area of 40 000 ha exists on the west mesa of the Imperial Valley with a water requirement of about 0.60 km^3/y. Coachella Valley could use 0.21 km^3/y to irrigate an additional 15 000 ha. Both Coachella and Imperial Valley have the same water rights to the Colorado River, and these are higher in priority than those assigned to coastal Southern California.

Facilities for transporting water to coastal Southern California exist and excess capacity will be available after 1985. Electrical capacity and energy represent the major portion of delivery costs from either the Colorado River or northern California. The energy required to deliver Colorado River water is about 1000 kilowatt hours less per 1000 m^3 than that for Northern California water (2). The legality of this water exchange between IID and the Metropolitan Water District has been evaluated (9).

Environmental Impacts-- Salton Sea. A Salton Sea modeling study was conducted by USBR (1) to project elevations and salinity for current conditions and for inflow reductions. For current conditions, elevations should stabilize between -71 and -70 m. The highest recorded level (1980) was -69.6 m. Reducing inflow by 0.28 km^3/y reduces the projected elevation to -75 m, about 15 years after full implementation. Under current conditions, salinity would reach 60 000 mg/L by 2010 and 75 000 mg/L by 2030. The corresponding salinities for 0.28 km^3/y reduction in inflow are 90 000 mg/L and 130 000 mg/L. Greater inflow reductions would result in lower sea elevations and higher salinities.

The age of unlimited Colorado River water is slowly coming to an end. Although the current irrigation efficiency of IID is above average (2), there is room for improvement. In principle, potential water savings in IID approximately equals the reduction in Colorado River diversion by California which will result when the Central Arizona Project is fully implemented.

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